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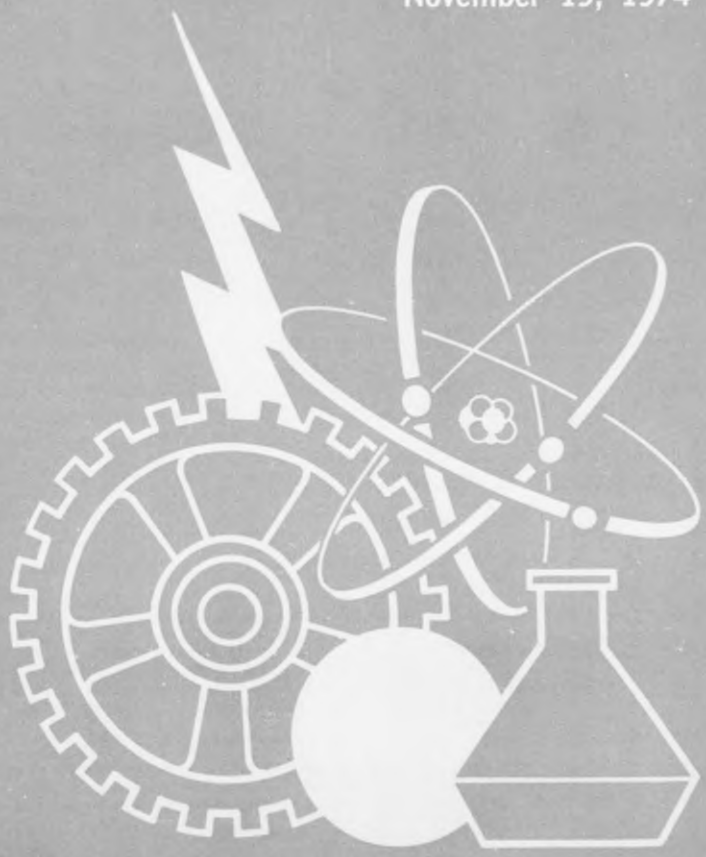

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

November 19, 1974 Volume 928 Number 3

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PATENT OFFICE NOTICES

Listing of Errata in the Patent Official Gazette

Effective December 3, 1974, Errata for Classification sequence will be printed at the beginning of each of the major sections: Reissues, Plant Patents, Patents (including General and Mechanical, Chemical, Electrical), and Design Patents.

ROBERT J. RISH,
Acting Assistant Commissioner for Administration.

Oct. 25, 1974.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,685,536, Starkey and Ransburg, METHOD FOR ELECTROSTATICALLY COATING ARTICLES; **2,794,417,** same, APPARATUS FOR ELECTROSTATICALLY COATING ARTICLES; **2,893,893,** W. W. Crouse, METHOD AND APPARATUS FOR ELECTROSTATIC COATING, **filed** Feb. 27, 1974, D.C., E.D. Pa. (Philadelphia), Doc. 74–473, *Ransburg Corp.* v. *The Daily Corp.*

2,794,417. (See 2,685,536.)

2,893,893. (See 2,685,536.)

3,289,568, R. L. Ronning, PRODUCT PELLETING AND COOLING APPARATUS; **3,429,349,** same, PULL-THROUGH HAMMER MILL; **3,643,404,** same, METHOD AND APPARATUS FOR ENHANCING THE SEPARATION OF PARTICULATE MATERIAL FROM AN EFFLUENT STREAM, **filed** May 13, 1974, D.C., N.D. Ohio (Toledo), Doc. C–74–181, *Richard L. Ronning* v. *Verhoff Alfalfa Mills.*

3,298,338, J. A. Clark, Sr., MEANS FOR REGULATING HEIGHT OF FUEL MOUNDS WITHIN A FURNACE, **filed** Jan. 29, 1974, D.C. Oreg. (Portland), Doc. C–74–71, *Joseph A. Clark, Sr.* v. *Edward Hines Lumber Company.* Stipulation for dismissal filed May 1, 1974.

3,428,333, V. E. Nelson, TOW-TYPE SECTIONAL AUTOMATICALLY FOLDABLE HARROW CART, **filed** May 15, 1974, D.C. Minn. (St. Paul), Doc. 6–74–110, *Clark Equipment Company* v. *Gladys Nelson Howen.*

3,429,349. (See 3,289,568.)

3,468,631, Raible, Bentley and De Wall, BLOOD OXYGENATOR WITH HEAT EXCHANGER; **3,488,158,** same, BUBBLER ASSEMBLY FOR OXYGENATOR; **3,578,411,** same, BUBBLER FOR BLOOD TREATING APPARATUS, **filed** Oct. 31, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2579–WMB, *Bentley Lab. Inc.* v. *William Harvey Research Corp.* Filed order dismissing action with prejudice. The court retains jurisdiction for 60 days to vacate this order and to reopen the action if further litigation is necessary, entered May 1, 1974.

3,488,158. (See 3,468,631.)

3,492,014, K. Von Besser, SAFETY SKI BINDING, **filed** Mar. 7, 1974, D.C., C.D. Utah (Salt Lake City), Doc. C–74–70, *Safety Systems, Inc.* v. *Miller Ski Company Incorporated.*

3,497,877, Diemond and Greenberg, POOL WITH INTEGRAL SLIDE; **D. 198,858,** L. E. Greenberg, SLED; **D. 216,577,** Greenberg and Diemond, POOL WITH INTEGRAL SLIDE, **filed** Mar. 3, 1970, D.C., S.D.N.Y., Doc. 70–C–858, *Coleco Industries Inc.* v. *Krotman-Antelis Inc.* Filed consent judgment, defendants are enjoined. Plaintiff's claims for unfair competition are dismissed with prejudice, Feb. 20, 1974.

3,578,411. (See 3,468,631.)

3,635,269, J. H. Price, METHOD AND MEANS FOR CUTTING TREES, **filed** May 17, 1974, U.S. Court of Claims (District of Columbia), Doc. 175–74, *John H. Price* v. *The United States.*

3,643,404. (See 3,289,568.)

3,657,747, Rogers, Jr. and Snitzer, SOFA BED AND LINKAGE MECHANISM, **filed** May 17, 1974, D.C., N.D. Ohio (Toledo), Doc. C74–188, *Flexsteel Industries, Inc.* v. *Kustom Fit of Ohio, Inc. and Kustom Fit Mfg. Co.*

3,670,549, Tselikov, Nosal and Verderevsky, METHOD AND APPARATUS FOR COLD ROLLING THIN WALL PIPE; **3,673,840,** same, COLD ROLLING PIPE MILL ROLLER TYPE ROLLING STAND; **3,680,345,** same, FLOATING, BLANK FEED AND TURNING MECHANISM FOR THIN WALL PIPE MILL; **3,739,624,** same, PIPE BLANK CLAMP, **filed** Jan. 8, 1974, D.C., E.D. Wash. (Spokane), Doc. C–74–13, *Patent Management, Inc.* v. *Sandvik Special Metals Corporation.* Notice of dismissal under Rule 41 FRCP without prejudice filed Apr. 3, 1974.

3,672,969, Nobel and Ostrow, ELECTRODEPOSITION OF GOLD AND GOLD ALLOYS, **filed** Jan. 16, 1974, D.C.N.J. (Newark), Doc. 74–73–C, *Lea-Ronal, Inc.* v. *Auric Corporation.* Stipulation and order of dismissal of action May 15, 1974.

3,673,840. (See 3,670,549.)

3,680,345. (See 3,670,549.)

3,739,624. (See 3,670,549.)

3,754,279, Valenti and Follett, THERMAL RECORDER HAVING ANALOGUE STYLUS AND PRINT HEAD, **filed** May 17, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1350, *General Electric Co.* v. *Gulton Industries.*

3,810,535, C. M. Phipps, GUMBALL MACHINE COIN BANK, **filed** May 14, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1312, *Superior Toy & Manufacturing Co., Inc.* v. *Tarrison Company and Bruce Trafman and Martin Trafman, doing business as Todd Lynn Sales.*

D. 198,858. (See 3,497,877.)

D. 216,577. (See 3,497,877.)

D. 219,118, Baker and Plecia, BOAT, **filed** May 8, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–1250, *Sidewinder Marine, Inc.* v. *Wreidt, Inc., doing business as Wriedt Custom Boats.*

P.P. 1,814, H. C. Swim, ROSE PLANT; **P.P. 2,056,** same; **P.P. 2,078,** same; **P.P. 2,592,** L. Lens, same; **P.P. 2,836,** Armstrong and Swim, same; **P.P. 3,128,** D. L. Armstrong, same, **filed** Oct. 10, 1972, D.C., E.D. Tex. (Tyler), Doc. 5595, *Armstrong Nurseries, Inc.* v. *Charles R. Cadey; Ty-Tex Rose Nurseries and Consolidated Nurseries, Inc.* Consent judgment, plant patents are owned by plaintiff and are presumed valid. Defendants have infringed plaintiff's patents. Defendants are hereby enjoined from selling, using or otherwise disposing of said rose plants, Oct. 24, 1972.

P.P. 2,056. (See P.P. 1,814.)

P.P. 2,078. (See P.P. 1,814.)

P.P. 2,592. (See P.P. 1,814.)

P.P. 2,836. (See P.P. 1,814.)

P.P. 3,128. (See P.P. 1,814.)

3,031,725, R. E. Omholt, FLOORING SYSTEMS, **filed** May 24, 1974, D.C., E.D. Wis. (Milwaukee), Doc. 71–C–486, *Powerlock Systems, Inc.* v. *Duo-Lok, Inc. and Baseman Brothers, Inc.* Judgment—Powerlock's Letters Patent has been infringed by Baseman. Baseman enjoined from infringing or contributing to the infringement of said patent. The counterclaim filed by Baseman is hereby dismissed, May 24, 1974.

3,113,115, Ziegler, Breil, Martin and Holzkamp, POLYMERIZATION CATALYST; **3,231,515,** same, CATALYST; **3,257,332,** same, POLYMERIZATION OF ETHYLENE; **3,392,162,** same, POLYMERIZATION OF ETHYLENICALLY UNSATURATED HYDROCARBONS, **filed** May 2, 1974, D.C. Del. (Wilmington), Doc. 74–87, *Eastman Kodak Company* v. *Studiengesellschaft Kohle mbH, as trustee for the Max-Planck-Institut fur Kohlenforschung.*

3,183,524, J. H. Hart, GIRL'S SWIMMING SUIT FOR COMPETITION AND RACING, **filed** May 30, 1974, D.C., S.D. Fla. (Miami), Doc. 74–715–C–NCR, *John L. Hart* v. *L. A. Baarcke, doing business as North Palm Beach Swim Shop.*

3,231,503, E. Laue, AMMONICALLY AQUEOUS SOLUTION CONTAINING SODIUM CHLORITE AND USED FOR DISSOLVING; **3,466,208,** L. J. Slominski, SOLUTION AND METHOD FOR DISSOLVING COPPER, **filed** Sept. 15, 1969, D.C., C.D. Calif. (Los Angeles), Doc. 69–1831–CC, *MacDermid, Incorporated* v. *Southern California Chemical Co., Inc.* Filed final judgment and order thereon that plaintiff take nothing and the action be dismissed on the merits. All claims of patents are invalid and void, entered May 31, 1974.

3,231,515. (See 3,113,115.)

3,257,332. (See 3,113,115.)

3,350,688, Kasper and Billingsley, MATRIX CIRCUITRY CONTROLLED BY TIMING MODULES HAVING INDIVIDUAL TIME DURATION OUTPUTS; **3,532,990,** F. S. Kasper, CONTROL SYSTEMS FOR EFFECTING THE TIMED ACTUATION OF A CONTROLLED DEVICE AND METHODS THEREFOR; **3,593,308,** J. C. Fagan, PAINT SPRAY CONTROL SYSTEM; **3,646,521,** V. E. Porter, MULTI-LEVEL SPRAY CONTROL, **filed** Mar. 26, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c765, *Amtron, Inc.* v. *Nordson Corp. et al.* Enter consent judgment order between plaintiff and defendant that the complaint is dismissed with prejudice and the counterclaim is dismissed with prejudice as to Nos. 3,350,688, 3,593,308 and 3,646,521 and dismissed without prejudice as to No. 3,532,990, May 23, 1974.

3,379,000, Webber and Wilson, METAL FILAMENTS SUITABLE FOR TEXTILES; **3,505,038,** same, METAL FIBRIL COMPACTS; **3,678,675,** W. G. Klein, ANTISTATIC FABRIC; **3,705,021,** Sundberg and Luksch, REINFORCED METAL FIBRIL MATS AND METHODS OF MAKING SAME; **3,759,708,** Sundberg and Luksch, METHOD OF MAKING METAL FIBRIL MATS AND REINFORCED METAL FIBRIL MATS, **filed** May 14, 1974, D.C., N.D. Ga. (Atlanta), Doc. C–74–934–A, *Brunswick Corporation* v. *N.W. Bekaert, S.A. and Bekaert Steel Wire Corporation.*

3,392,162. (See 3,113,115.)

3,466,208. (See 3,231,503.)

3,505,038. (See 3,379,000.)

3,513,743, D. M. Montguire, MULTIPLE-HEAD SLITTING APPARATUS; **Re. 27,918,** same, **filed** Apr. 1, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c907, *National Steel Corporation* v. *H. R. Braner Engineering, Inc.*

3,532,990. (3,350,688.)

3,552,469, L. M. Corless, TIRE BEAD SEATER; **3,675,705,** same, TIRE BEAD SEATING AND INFLATION APPARATUS; **3,804,871,** B. Buchholz, ENCAPPED POLYMERIC TIN MERCAPTIDES FOR STABILIZING POLYVINYL CHLORIDE, **filed** Aug. 23, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2174, *B & J Manufacturing Company* v. *Hennessy Industries, Inc.*

3,593,308. (See 3,350,688.)

3,608,646, E. C. Ryan, ROTARY HOE, **filed** Nov. 9, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–1215, *Western Litho Plate & Supply Co.* v. *National Machine Company.* Journal entry, plaintiff dismisses its complaint as to Claim 3 with prejudice and its complaint in all other respects is dismissed without prejudice to the right of each defendant to use the said prior events, acts and facts as a defense in any future civil action, May 24, 1974.

3,615,117, P. E. Neidlinger, ANTI-SAIL TARPAULIN, **filed** Apr. 9, 1973, D.C., W.D.N.C., Doc. C–C–73–78, *East Akron Tarp & Ratched Manufacturing Co.* v. *Austin Cushion and Canvas Company.* Judgment—Ordered: Patent is invalid; plaintiff's complaint is dismissed on the merits, May 30, 1974.

3,646,521. (See 3,350,688.)

3,674,444, A. Otani, IRON SCRAP BUNDLES, **filed** May 28, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1452, *Akemasa Otani* v. *Tezuka Kosan Co., Ltd., Kunitoshi Tezuka and Hyman Michaels Co.*

3,675,705. (See 3,552,469.)

3,678,675. (See 3,379,000.)

3,705,021. (See 3,379,000.)

3,759,708. (See 3,379,000.)

3,804,871. (See 3,552,469.)

Re. 27,918. (See 3,513,743.)

Certificates of Correction for the Week of Nov. 19, 1974

P.P. 3,213	3,744,606	3,786,658	3,803,642	3,816,281	3,824,205	3,829,287	3,832,770
Re. 27,893	3,744,946	3,736,695	3,804,834	3,816,329	3,824,277	3,829,289	3,832,909
Re. 28,125	3,745,370	3,786,874	3,804,844	3,816,513	3,824,294	3,829,435	3,833,054
Re. 28,138	3,745,486	3,787,121	3,804,882	3,816,706	3,824,409	3,829,475	3,833,193
3,557,066	3,745,706	3,787,209	3,804,929	3,816,878	3,824,506	3,829,554	3,833,199
3,605,209	3,746,957	3,787,366	3,804,941	3,817,016	3,824,590	3,829,750	3,833,250
3,612,890	3,748,402	3,787,493	3,805,425	3,817,052	3,824,623	3,829,772	3,833,276
3,627,869	3,750,814	3,788,561	3,805,588	3,817,199	3,824,681	3,829,852	3,833,438
3,638,078	3,751,197	3,788,724	3,805,695	3,817,253	3,824,749	3,829,892	3,833,480
3,642,769	3,751,198	3,788,867	3,805,763	3,817,682	3,824,803	3,829,898	3,833,493
3,649,241	3,751,555	3,789,008	3,805,955	3,817,995	3,824,873	3,829,960	3,833,542
3,650,509	3,751,665	3,789,247	3,806,312	3,818,117	3,824,875	3,829,985	3,833,556
3,651,143	3,751,666	3,789,849	3,806,415	3,818,348	3,824,890	3,830,045	3,833,568
3,651,316	3,752,769	3,790,149	3,806,580	3,818,772	3,825,083	3,830,113	3,833,574
3,660,020	3,753,978	3,790,336	3,807,153	3,819,185	3,825,152	3,830,154	3,835,611
3,668,417	3,754,173	3,790,381	3,807,902	3,819,219	3,825,355	3,830,163	3,833,684
3,676,856	3,755,579	3,791,579	3,808,145	3,819,376	3,825,589	3,830,173	3,833,733
3,682,043	3,757,883	3,792,010	3,808,158	3,819,394	3,825,651	3,830,247	3,833,738
3,682,584	3,758,690	3,792,427	3,808,165	3,819,411	3,825,713	3,830,326	3,833,741
3,682,861	3,759,949	3,792,729	3,808,177	3,819,955	3,825,787	3,830,551	3,833,765
3,685,956	3,760,348	3,793,187	3,808,343	3,819,985	3,825,799	3,830,592	3,833,799
3,687,131	3,761,039	3,793,534	3,808,527	3,820,081	3,825,927	3,830,630	3,833,988
3,689,565	3,761,527	3,794,165	3,808,743	3,820,359	3,826,099	3,830,644	3,834,081
3,691,180	3,763,208	3,794,731	3,808,878	3,820,507	3,826,462	3,830,648	3,834,108
3,691,077	3,763,250	3,794,895	3,809,536	3,820,584	3,826,527	3,830,750	3,834,479
3,695,823	3,764,181	3,794,900	3,809,657	3,820,723	3,826,640	3,830,820	3,834,511
3,701,686	3,765,923	3,795,649	3,809,841	3,820,949	3,826,661	3,830,836	3,834,547
3,701,817	3,766,378	3,795,651	3,810,231	3,821,286	3,826,839	3,830,866	3,834,600
3,705,499	3,766,774	3,795,760	3,810,268	3,821,430	3,826,840	3,830,897	3,834,620
3,709,871	3,767,002	3,796,086	3,810,340	3,821,886	3,827,072	3,830,940	3,834,760
3,711,642	3,767,901	3,796,875	3,810,576	3,822,083	3,827,282	3,831,075	3,834,915
3,712,706	3,769,534	3,797,036	3,810,688	3,822,226	3,827,622	3,831,080	3,834,967
3,713,921	3,770,144	3,797,224	3,811,345	3,822,312	3,827,836	3,831,152	3,835,129
3,714,108	3,772,028	3,797,264	3,811,784	3,822,346	3,827,866	3,831,216	3,835,173
3,714,151	3,773,477	3,797,573	3,812,427	3,822,935	3,827,884	3,831,322	3,835,777
3,714,372	3,773,492	3,797,984	3,812,428	3,822,997	3,827,922	3,831,328	3,836,007
3,716,906	3,773,861	3,799,448	3,812,492	3,823,034	3,827,968	3,831,334	3,836,364
3,718,717	3,777,335	3,799,801	3,812,506	3,823,105	3,828,025	3,831,431	3,836,432
3,718,948	3,778,865	3,800,018	3,813,100	3,823,108	3,828,047	3,831,504	3,836,444
3,720,760	3,779,235	3,800,806	3,813,230	3,823,130	3,828,059	3,831,531	3,836,448
3,722,083	3,779,354	3,801,328	3,813,475	3,823,306	3,828,069	3,831,640	3,836,449
3,723,394	3,779,413	3,801,506	3,814,132	3,823,401	3,828,091	3,831,674	3,836,748
3,726,827	3,781,179	3,801,571	3,814,308	3,823,525	3,828,322	3,831,682	3,836,838
3,728,151	3,782,098	3,801,841	3,814,754	3,823,594	3,828,359	3,831,720	3,836,983
3,732,085	3,782 281	3,801,852	3,814,817	3,823,613	3,828,419	3,831,759	3,837,111
3,732,339	3,782,828	3,801,994	3,814,874	3,823,637	3,828,435	3,831,792	3,837,553
3,734,716	3,783,849	3,802,089	3,815,072	3,823,743	3,828,506	3,831,907	3,837,664
3,734,954	3,783,944	3,802,642	3,815,293	3,823,757	3,828,575	3,831,923	3,837,683
3,737,149	3,784,238	3,802,906	3,815,358	3,823,769	3,828,603	3,832,154	3,837,693
3,737,330	3,784,287	3,802,995	3,815,555	3,823,797	3,828,632	3,832,454	3,837,796
3,739,312	3,784,515	3,803,128	3,816,022	3,823,859	3,828,790	3,832,510	3,837,816
3,740,200	3,784,734	3,803,444	3,816,037	3,824,125	3,829,075	3,832,515	3,838,158
3,740,873	3,785,824	3,803,575	3,816,064	3,824,127	3,829,104	3,832,580	3,838,342
3,741,252	3,786,087	3,803,590	3,816,091	3,824,159	3,829,106	3,832,630	
3,743,787	3,786,338	3,803,602	3,816,268	3,824,173	3,829,270	3,832,703	

Dedications

3,078,307.—*Paul N. Craig*, Roslyn, Pa., and *Charles L. Zirkle*, Haddon Heights, N.J. TRIFLUOROMETHYLPHENYL-ALKYLAMINE DERIVATIVES. Patent dated Feb. 19, 1963. Dedication filed May 16, 1974, by the assignee, *A. H. Robins Company, Incorporated.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,205,074.—*Herman Nack*, and *Howard G. Schutz*, Columbus, Ohio. METHOD OF TREATING FOOD PRODUCT PREPARED IN FLUIDIZED BED. Patent dated Sept. 7, 1965. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,238,893.—*Paul Zuppiger*, Carouge, Geneva, Switzerland. VARYING SPEED TRANSPORT APPARATUS, TRANSPORT MEMBERS AND COUPLINGS. Patent dated Mar. 8, 1966. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,239,942.—*William H. Mink* and *Herman Nack*, Columbus, Ohio. PROCESS FOR DRYING FOOD. Patent dated Mar. 15, 1966. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,250,104.—*Roland B. Fischer*, Columbus, Ohio. HIGH-TEMPERATURE ROLLING MILL. Patent dated May 10, 1966. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,269,025.—*Charles E. Dryden, William H. Mink,* and *Herman Nack,* Columbus, Ohio. FREEZE-DRYING METHOD UNDER HIGH VACUUM UTILIZING A FLUIDIZED BED. Patent dated Aug. 30, 1966. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

Erratum

All reference to Patent No. 3,694,905 to W. H. Cooksey for Ignition Distributors appearing in the OFFICIAL GAZETTE of October 3, 1972, should be deleted since no patent was granted.

Disclaimers

3,541,526.—*Oscar C. Levy,* Pikesville, and *George A. Groth,* Fallston, Md. APPARATUS FOR RECORDING SALES AND THE LIKE. Patent dated Nov. 17, 1970. Disclaimer filed Mar. 18, 1974, by the assignee, *American Totalisator Company, Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,566,982.—*Jacob Henry Share,* Albertson, N.Y., and *Stanley Share,* Ormand Beach, and *Seymour Joseph Share,* Daytona Beach, Fla. WELL POINT SYSTEM. Patent dated Mar. 2, 1971. Disclaimer filed June 5, 1974, by the assignee, *Stanley-Jackson Corp.*

Hereby enters this disclaimer to claims 1–8 and 10–15 of said patent.

3,776,982.—*Rene Nicolet, Walter Gutmann,* and *Theodor Volker,* Freiburg, Switzerland. PROCESS FOR THE PRODUCTION OF IMPACT RESISTANT TRANSPARENT POLYMERS OF VINYL CHLORIDE AND ACRYLIC ACID ESTER. Patent dated Dec. 4, 1973. Disclaimer filed Mar. 19, 1974, by the assignee, *Lonza Ltd.*

Hereby disclaims the portion of the term of the patent subsequent to Dec. 4, 1990.

3,778,271.—*Edwin H. Land,* Cambridge, Mass. PHOTOGRAPHIC PRODUCTS COMPRISING AN OPACIFYING AGENT IN ASSOCIATION WITH A REFLECTING AGENT. Patent dated Dec. 11, 1973. Disclaimer filed May 7, 1973, by the assignee, *Polaroid Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Dec. 10, 1985.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 26, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-8-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids, Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-10-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-13-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-25-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-17-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-20-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-9-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-1-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-17-73
DESIGNS, GROUP 290—C D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-19-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	1-2-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-14-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	2-26-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-22-74

Expiration of patents: The patents within the range of numbers indicated below expire during September 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,811,722 to 2,814,801, inclusive
Plant Patents..... Numbers 1,656 to 1,660, inclusive

REISSUES

NOVEMBER 19, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

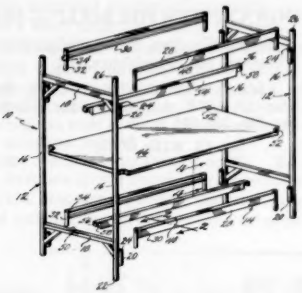
28,244
STOCK RACK

John D. Evans, Rocky Mount, N.C., assignor to Metals, Inc., Rocky Mount, N.C.

Original No. 3,696,763, dated Oct. 10, 1972, Ser. No. 34,456, May 4, 1970. Application for reissue May 22, 1973, Ser. No. 362,856

Int. Cl. A47b *3/06*

U.S. Cl. 108—157 12 Claims



1. A knock-down stock rack comprising:

a pair of longitudinally spaced, upright standards, each standard including a pair of transversely spaced, upright posts;

at least one upright tubular socket member secured to each post intermediate its free ends and lying in an upright plane defined by and extending between two longitudinally aligned posts, the upper end of each socket member being spaced from the upper end of the post;

a longitudinally extending support member extending between each longitudinally aligned post, each support member having a pair of downwardly extending dowels secured to the free ends thereof and telescopically received in the socket members secured to the posts; and

at least one rectangular shelf seated upon the support members and extending between the posts, the shelf having a cut-out at each corner within which each post is at least partially received, the shelf maintaining the posts in a rectangular alignment and increasing the rigidity of the stock rack.

28,245
OPTICAL TESTING DEVICE AND METHOD OF USING THE SAME

Joseph S. Nupuf, 1342 Cleveland Ave. NW. Canton, Ohio 44703

Original No. 3,540,828, dated Nov. 17, 1970, Ser. No. 600,216, Dec. 8, 1966. Application for reissue Nov. 17, 1972, Ser. No. 307,514

Int. Cl. G01b *9/00*

U.S. Cl. 356—124 17 Claims

1. In a system for measuring optics or the like comprising,

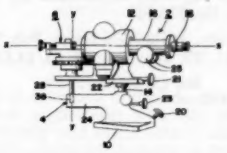
a measuring means including a lens system having a relatively fixed optical axis for measuring the curvature of the optical surface of an optic,

a supporting means detachably mounted on said measuring means for supporting said optic in alignment with said optical axis,

said supporting means pivotally mounted on said measuring means for rotation in a horizontal plane about a vertical axis which intersects said optical axis,

a carriage means movably mounted on said support means for movement relative to said measuring means,

an adjustment means operably coacting with said carriage means for selectively positioning the apex of the optical surface of said optic substantially at the point of intersection of said optical axis and said vertical axis, and



said supporting means including another adjustment means for rotating said optic about said vertical axis for measuring the curvature of said optical surface from its geometrical center along a horizontal plane [to] *toward* its peripheral edge.

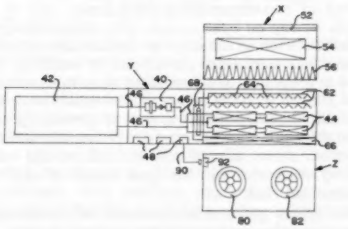
28,246
HIGH CAPACITY PREFABRICATED AIR CONDITIONING SYSTEM

William F. Stockford and Joseph M. Gamewell, Salisbury, N.C., assignors to Gamewell Mechanical, Inc., Salisbury, N.C.

Original No. 3,721,107, dated Mar. 20, 1973, Ser. No. 143,319, May 14, 1971. Application for reissue Dec. 13, 1973, Ser. No. 424,378

Int. Cl. F25d *19/00*

U.S. Cl. 62—298 6 Claims



1. A prepackaged air conditioning system comprising:

an intake section including a first separable enclosure having means associated therewith receiving air to be cooled and treated;

a cooling unit including a second separable enclosure with a longitudinal axis and having a condenser, a centrifugal compressor, and a set of cooling coils

therein, said cooling coils being positioned at one end of said enclosure;

a supply section including a third separable enclosure having means associated therewith for supplying air to an area to be cooled; and

said first and third enclosures having means associated therewith for attachment to said second enclosure adjacent and alongside said one end in operative alignment with said set of cooling coils, whereby the flow of air past said cooling coils is transverse the longitudinal axis of said second enclosure.

28,247

AUTOMATIC FILM DEVELOPING APPARATUS

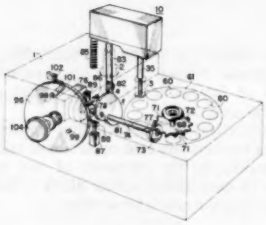
Shigeru Okayama, Seijyo, Setagaya-ku, Tokyo, Kunihiro Okayama, Kameino, Fujisawa, and Hidehiko Takahashi, Soshigaya, Setagaya-ku, Tokyo, Japan

Original No. 3,605,601, dated Sept. 20, 1971, Ser. No. 800,232, Feb. 18, 1969. Application for reissue Sept. 19, 1973, Ser. No. 398,845

Claims priority, application Japan, Feb. 27, 1968, 43/12,393; Mar. 6, 1968, 43/14,433

Int. Cl. G03d *13/02*

U.S. Cl. 354—335 **7 Claims**



1. A film developing apparatus comprising, in combination:

a casing;

a spool rotary device provided above the casing and including a vertical rotary shaft adapted to be [fitted tightly within the hole of] *engaged with* a spool of a cassette packing a photographed film;

a rotary direction reverse device to reverse the rotary direction repeatedly and alternately of said vertical shaft;

a group of cup-shaped processing tanks *each of said tanks having an open mouth* with a tank being provided for each of the steps of the developing process, said tanks containing developer or washing water and at least one of them being removably arranged and aligned with the axis of said vertical rotary shaft;

a shifting device for said group of processing tanks, said shifting device bringing the processing tanks, one after the other, aligned with the axis of said vertical rotary shaft and with the open mouth of said tanks below said shaft;

a timer device and an electric circuit which determines the processing period of each processing step;

an ascent and descent device for the spool rotary device, *said ascent and descent device having a top position and a bottom position,* wherein under control of said timer device at [a bottom dead point] *the bototm position* of said ascent and descent device [the] *a* cassette fitted to one end of the vertical rotary shaft is immersed in the processing tank located directly below the vertical rotary shaft [at a top dead point thereof] *and thereafter at said top position of said ascent and descent device* said cassette [being] *is* elevated to the place where said processing tanks are not prevented from shifting when said shifting device for the processing tanks of a group is operated; and

said timer device and circuit controlling the operation of said spool rotary device, said ascent and descent device, and said shifting device for the processing tanks;

wherein at every predetermined processing period of each processing step, each operation including the stopping and elevating of said vertical rotary shaft, the shifting of said processing tanks at the top [dead point] *elevation* of the vertical rotary shaft and the lowering and re-rotation of said shaft is performed in turn.

28,248

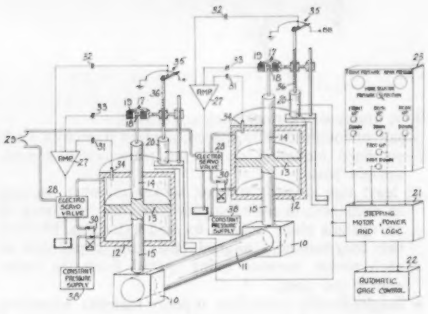
SCREWDOWN SYSTEM FOR ROLLING MILL

Robert Herbst, Cheshire, Conn., assignor to Textron, Inc., Providence, R.I.

Original No. 3,566,638, dated Mar. 2, 1971, Ser. No. 732,999, May 29, 1968. Application for reissue Mar. 20, 1972, Ser. No. 236,501

Int. Cl. B21b *37/08*

U.S. Cl. 72—8 **5 Claims**



1. In a screwdown system for a mill including [a roll] *rolls defining a roll gap,* means for supporting [a roll] *the rolls* and means for [causing said roll to move to effect mill adjustment] *controlling the position of one of said rolls to control the roll gap,* the improvement comprising a double-acting hydraulic cylinder means having a piston for providing [the] *a screwdown* force [to effect mill adjustment] *on one of said rolls,* servo valve means responsive to a command signal for controlling the flow of hydraulic fluid to position said cylinder, [means providing a rolling pressure reference signal, piston displacement sensing means for providing a signal indicative of piston displacement, and means for combining said reference signal and the displacement signal to derive the command signal] *means for predetermining the position and sensing displacement of said one of said rolls, comprising a core and coil movable relative to each other, and effective to emit a signal indicative of the relative positions, means for positioning one of said coil and core to predetermine the roll gap, the other of said coil and core being coupled to said piston for movement therewith, and means for applying the emitted signal to said servo valve as the command signal to control the roll gap.*

28,249
ADJUSTABLE TIMER HAVING ROTATING CAM AND WIDE RANGE VARIABLE DWELL
Malcolm J. Estrem, Edina, Minn., by The Cornelius Company, Anoka, Minn., assignee
Original No. 3,670,128, dated June 13, 1972, Ser. No. 865,904, Oct. 13, 1969, which is a division of application Ser. No. 795,389, Jan. 2, 1969, which is a continuation-in-part of application Ser. No. 696,673, Dec. 11, 1967, both now abandoned. Application for reissue Nov. 23, 1973, Ser. No. 418,301
Int. Cl. H01h *3/42, 43/10*
U.S. Cl. 200—153 LB 17 Claims

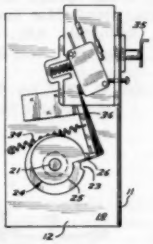
1. Adjustable timing apparatus having variable dwell switching comprising in combination;

a. a rotatable shaft;

b. at least one cam means mounted on said shaft for rotation therewith, said cam means having a peripheral surface including a substantial circumferentially elongated portion of constantly varying radius and a short circumferentially and radially extending switch resetting means for non-constantly varying radius disposed intermediate the portions of largest and smallest radius on said substantial circumferentially elongated portion said last named means being operable to reset a switch contact assembly subsequent to actuation thereof;

c. means operable to rotate said shaft;

d. at least one spring switch contact assembly having a normal deactuated position, and an actuated position, and including a cam follower in engagement with the peripheral surface of said cam, said cam follower being operable to actuate said switch contact assembly at a predetermined radial position of said cam and said shaft and to reset and deactuate said switch contact assembly by said resetting means causing said switch contact assembly to move past its normal deactuated position before allowing the switch contact



assembly to assume its normal deactuated position in response to engagement with said switch resetting means whereby said switch contact assembly may be successively, repeatably actuated at the same angular position of said shaft and said cam as rotation thereof is effected.

PLANT PATENTS

GRANTED NOVEMBER 19, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,653
HYBRID TEA ROSE PLANT
Armando Valepiano and Sergio Valepiano, both of Via Forte San Paolo 27, Ventimiglia, Italy 00139
Filed Mar. 5, 1973, Ser. No. 338,220
Claims priority, application Italy, Mar. 3, 1972, 48,755/72
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—20 1 Claim

1. A hybrid tea rose plant, having medium sized flowers, colored between Turkey red, Orient red, characterized in that the first plant of this variety was obtained by isolating a sport of the variety of rose commercially known by the name of Baccara, and said plant having the following unique combination of characteristics:

a. *from the physical standpoint:* a plant that is vigorous, bushy, and slender and is of average density, growing to an average height of 150–200 cm. from the ground, with numerous branches and flowers; stems are not widely spaced and are well covered with large leaves of a dark green that matches the flowers harmoniously; the flowers are from average to large in size, of harmonious shape, of a color between Turkey red and Orient red with tinges of red Vermilion, and are suitable for commerce and export;

b. *from a physiological standpoint:* a plant that is resistant to disease, that is simple to grow for industrial production and which has considerable vegetative affinity for the main graft recipients; the flowers of which are resistant to the inclemencies of weather and to discoloration from sunlight, withstand transport and packing well, and which last well after being cut; and the flowers and other parts of the plant being suitable for reproduction by vegetative means.

3,654
MINIATURE ROSE PLANT
Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277
Filed Dec. 26, 1973, Ser. No. 428,310
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—10 1 Claim

1. A new and distinct variety (cultivar) of miniature rose plant of hardy, dwarf, rounded, much branched bush type, as illustrated and described, characterized by buds and flowers resembling the "Baccara" (Plant Patent 1,367, expired) hybrid tea rose in general form (only in miniature), the color being a darker shade of red and the open flower having a similar fluorescent glow; the general color effect being dark red similar to "Dwarf King," easy to propagate from cuttings; with medium small dull to semi-glossy foliage, tinted reddish on new growth; with flowers of above average lasting quality borne singly or several to stem in loose clusters.

PATENTS

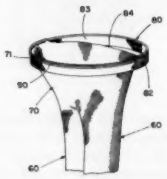
GRANTED NOVEMBER 19, 1974

GENERAL AND MECHANICAL

3,848,266
METHOD OF SECURING A WAISTBAND TO COMBINATION GARMENT

Mildred Conaway, Siloan Springs, Ark.; Alligene Thompson, Tahlequah, Okla.; Dorsie Mae Bowen, Fayetteville, Ark.; Danny Brown, Springdale, Ark., and Larry McGarrah, Summers, Ark., assignors to Bear Brand Hoisery Co., Chicago, Ill.

Filed Jan. 30, 1974, Ser. No. 437,852
Int. Cl. A41f *9/00*
U.S. Cl. 2—237 **2 Claims**

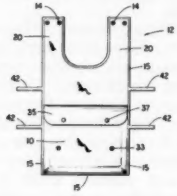


1. A method of securing an elastic waistband to a garment having a generally tubular panty portion with a waist opening therein, the method comprising placing the elastic waistband against the garment with the outside of the elastic waistband in contact with the outside of the garment and with the adjacent edge of the wasitband spaced inwardly from the waist opening of the garment a distance less than the width of the elastic waistband, folding the portion of the garment forming the waist opening over the waistband to overlap the portion of the garment and the waistband, and sewing together the overlapped portion of the garment and the waistband to provide a garment and elastic waistband wherein the waistband extends beyond the waist opening of the garment.

3,848,267
CARRIER GARMENT-CUSHION

Jimmy F. De Spain, 5 Cool Creek Cir., Carmel, Ind. 46032

Filed Oct. 17, 1973, Ser. No. 407,220
Int. Cl. A41d *1/00, 3/02*
U.S. Cl. 2—94 **10 Claims**



1. A garment comprising:

a. a first vest section having a pocket and fastening means at the shoulder;

b. a second vest section having a pocket and fastening means at the shoulder, said fastening means of said second vest section being receptive to said fastening means of said first vest section;

c. a first cushion member, said first cushion member being fittable within said pocket of said first vest section;

d. a second cushion member, said second cushion member being fittable within said pocket of said second vest section;

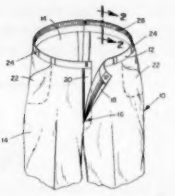
e. means for securing said fastening means of said first vest section to said pocket of said first vest section to form a cushion configuration; and

f. means for securing said fastening means of said second vest section to said pocket of said second vest section to form a cushion configuration.

3,848,268
MULTIPLE SIZE SLACKS

Anthony H. D'Ambrosio, 10th St. and Godfrey Ave., Philadelphia, Pa. 19126

Filed Oct. 9, 1973, Ser. No. 404,610
Int. Cl. A41f *9/00*
U.S. Cl. 2—237 **14 Claims**



1. A waist assembly for a garment comprising:

a waistband of a relatively stretchable outer garment fabric turned over at its upper extremity to form a bight with a small inner flap depending therefrom;

an elastic strip of one piece construction having an upper portion which is longitudinally elastic including means substantially preventing transverse bending of said upper portion whereby to exhibit no-roll characteristics, said upper portion being positioned adjacent to and sewn to the side of said inner flap facing inwardly to the wearer away from said waistband with the top of said strip being approximately coextensive with said bight; and

a curtain depending from the lower portion of said elastic strip and sewn thereto on the side of said elastic strip facing inwardly toward the wearer and away from said outer garment.

3,848,269
EXPANDABLE GARMENT WAISTBAND

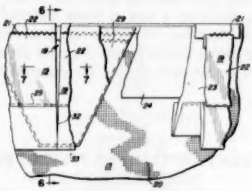
Sanford I. Forrest, 8002 Ivy Ln., Pikesville, Md. 21208

Continuation-in-part of Ser. No. 298,256, Oct. 17, 1972, Pat. No. 3,800,332. This application Nov. 12, 1973, Ser. No. 414,899
Int. Cl. A41f *9/00*
U.S. Cl. 2—237 **3 Claims**

1. In a garment having attached front and rear fabric panels, each of said panels having respective inside and outside surfaces, a waistband in a peripheral edge portion of said attached panels, a curtain co-extensive with said waistband on said inside surfaces of said panels, a vertical slit in said rear panel, through said waistband and curtain, said slit defining a waistband forward section and a waistband rearward section, the improvement comprising:

elastic means at said vertical slit between said waistband and said curtain, said elastic means having a forwardly extending portion, a rearwardly extending portion, and a base;

means for securing said base of said elastic means to said curtain;



means for attaching said forwardly extending portion and said rearwardly extending portion of said elastic means to said curtain whereby said slit is urged by said elastic means to a normally closed position;

a fabric coating for covering said elastic means, said fabric coating of design similar to that of said garment; and

means for attaching said fabric coating to said elastic means.

3,848,270

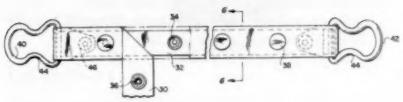
BELT HAVING INTERCHANGEABLE DECORATIVE STRIPS

Robert B. Rand, P.O. Box 1939, Daytona Beach, Fla. 32015

Filed May 8, 1973, Ser. No. 358,414

Int. Cl. A41f *9/00*

U.S. Cl. 2—311 **1 Claim**



1. A belt for fastening around the torso of a wearer, comprising a body encircling member having in operative position an inner side and an outer side, readily detachable, elongated decorative strip means connected to the outer side of said member, cooperating fastener means for fastening said decorative strip means to said member comprising cooperating fastener elements on both the outer side of said member and the adjacent side of said decorative strip means, a buckle for attaching end portions of said member to each other, and said decorative strip means having an end passing through said buckle and secured to the inner side of said member.

3,848,271

LADY'S BELT

Dhruv Goele, 51-21 Function Blvd., Elmhurst, N.Y. 11373

Filed Nov. 21, 1973, Ser. No. 418,117

Int. Cl. A41f *3/02, 9/00*

U.S. Cl. 2—338 **1 Claim**

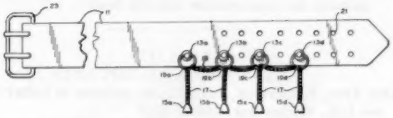
1. A decorative article of apparel comprising:

a. a belt having a plurality of essentially equally spaced holes therein and including means for fastening said belt about the waist of the wearer;

b. a plurality of studs having central internal threads extending in from the rear attached to said belt by means of bolts inserted from the back of said belt through said holes and screwed into said threads;

c. a plurality of rings one being attached to each of said studs at the end which projects from the front of said belts;

d. a plurality of chains, one being suspended from each of said rings, said chains each having one end attached to a ring with at least some of said chains passing through one ring and suspended therefrom and attached to another of said rings;



e. additional chains attached to and extending between any two of said rings not having a chain attached to one and suspended from the other so that each of said rings has a section of chain extending between it and the next adjacent chain;

f. a plurality of bells, one attached to the other end of each one of said plurality of suspended chains.

ERRATUM

For Class 3—1 see:
Patent No. 3,848,276

3,848,272

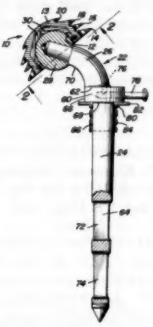
ARTIFICIAL HIP JOINT

Douglas G. Noiles, New Canaan, Conn., assignor to United States Surgical Corporation, Baltimore, Md.

Filed Jan. 13, 1972, Ser. No. 217,540

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **24 Claims**



1. An artificial hip joint, comprising:

an acetabulum prosthesis of the cotyloid cavity defining an aperture having screw threads on the inner surface thereof and a plurality of blades extending outwardly away from said aperture for engaging the prepared wall of the cotyloid cavity;

at least one insert having an outer threaded surface and an inner bearing surface inserted into said aperture and threadedly connected by means of said threads to said acetabulum prosthesis to form a socket, the outer surface of said at least one insert engaging and being supported by the inner surface of said aperture; and

a prosthesis of the head of the femur movably interconnected with said acetabulum prosthesis and including a pin to be driven into the bone-marrow channel of the femur, a curved neck integral with the pin, and a hip ball positioned on the neck, movably located within said socket and in movable contact with said insert, said socket enveloping more than one-half of the hip ball to prevent withdrawal of the hip ball from the socket, said artificial hip joint composed of surgical grade materials suitable for implantation into the body.

3,848,273

SHANK FOR BONE IMPLANTS

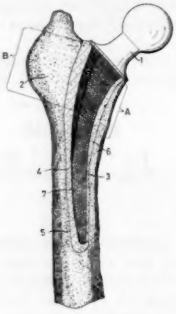
Otto Frey, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Jan. 29, 1973, Ser. No. 327,803

Claims priority, application Switzerland, Feb. 2, 1972, 1550/72

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **8 Claims**



1. A solid shank for implanting in a bone cement to anchor a bone implant in a bone, said shank having a narrowing cross-sectional area towards one end and an external nonporous surface having discrete unconnected depressions therein between raised portions of said shank, said depressions being between 10 microns and 100 microns depth.

3,848,274

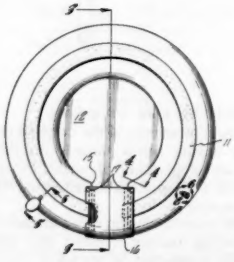
INFLATABLE BED PAN

Janet Oliver, 428½ N. Kenwood, Glendale, Calif. 91206

Filed Aug. 10, 1973, Ser. No. 387,303

Int. Cl. A61g *9/00*

U.S. Cl. 4—113 **7 Claims**



1. An inflatable bed pan comprising: a semitoroidal shaped air-tight member having a bottom member stretched thereacross to close the bottom of the semitoroidal member; said semitoroidal member being interrupted at one point in its circumference to form a single discharge passage; a flap attached to said semitoroidal member for closing said discharge passage said flap having locking means adjacent the extended end thereof, closure means carried by said semitoroidal member on either side of said discharge passage and being adapted to cooperate with said locking means to secure said flap in passage closing position; a ring of foam material attached to said semitoroidal member which serves as a wedge between the patient and direct contact with the pan; means for filling said member with air, and means for controllably deflating said member.

3,848,275

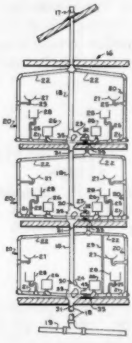
STANDPIPE VENT SYSTEM AND FITTING FOR MULTITORY BUILDINGS

Emile V. Dumas, 307 Washington St., Monroe, Mich. 48161

Filed July 23, 1973, Ser. No. 381,494

Int. Cl. E03d *9/04*

U.S. Cl. 4—211 **8 Claims**



1. A sanitary system for a multi-story building, comprising, in combination, a plurality of sanitary fixtures with drains on different floors, a vertical drain stack having upper and lower ends and including a plurality of vertically oriented drain pipes and a plurality of loop vent fittings connecting said drain pipes in series, one loop vent fitting adjacent each floor having a sanitary fixture, each loop vent fitting including a closed loop conduit with connecting means, a sanitary sewer pipe, means connecting said sewer pipe to the lower end of said drain stack, a roof vent, means connecting said roof vent to the upper end of said drain stack, at least one branch sanitary drain circuit for each floor having a fixture, each circuit having a soil end connected to said connecting means on the loop vent fitting for the adjacent floor and a venting end connected to said connecting means on the first superjacent loop vent fitting in the drain stack, means connecting said venting end of the uppermost branch circuit to the atmosphere, and means connecting the drains of all fixtures on each floor to the adjacent branch sanitary drain circuit intermediate said soil end and said venting end.

3,848,276

KNEE IMPLANT DEVICE

Ysidore M. Martinez, 5608 Lakewood Dr., San Diego, Calif. 92041

Filed May 3, 1973, Ser. No. 356,816

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **14 Claims**

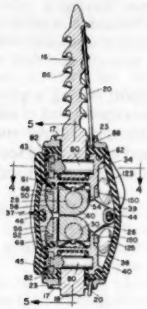
1. A joint prosthesis comprising:

joint means,

attachment means for securing said joint means between relatively movable skeletal members,

said joint means for constraining said skeletal members to a combination of relative rotation and translation,

said joint means comprising at least two axially spaced pivot bearings incorporating two pivot pins, a common pivot frame, and two connector blocks,



said two pivot pins spaced axially in said joint means and carried on said common pivot frame,

said pivot bearings being connected to said attachment means through said connector blocks,

said connector blocks having an axial bore and receiving said pivot pins through a transverse opening through said axial bore.

3,848,277

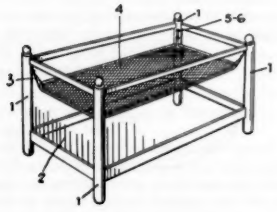
CRIB MATTRESS ADJUSTING DEVICE

Silvana Reguitti, via S. Rocchino, 54 Brescia, Italy

Filed Jan. 26, 1973, Ser. No. 327,107

Int. Cl. B65d *63/10;* **A47c** *17/14*

U.S. Cl. 5—11 **1 Claim**



1. In a crib for infants having vertical supports at each of the four corners thereof, barrier means connecting the supports to one another and defining a rectangular inner region, a mattress-supporting frame positioned within the barrier means and perpendicularly thereto, the improvement consisting of a mattress adjusting device which comprises a flexible strip having an upper extremity with an opening thereat and to be connected to the vertical support of said crib, a first plurality of openings at predetermined distances from said upper extremity along said strip, and a lower extremity with a second opening, said lower extremity forming a loop in said strip, which loop is to engage the mattress-supporting frame, and a fastener extending through said second opening and a selected one of said first openings.

3,848,278

PEDIATRIC BED

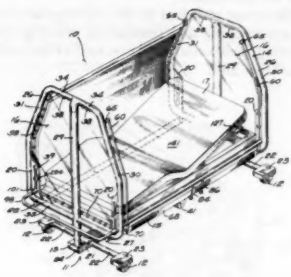
Robert L. Propst, Ann Arbor, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Division of Ser. No. 175,505, Aug. 27, 1971, Pat. No. 3,763,507.

This application Sept. 27, 1972, Ser. No. 292,517

Int. Cl. A61g *7/02;* **A47c** *27/08*

U.S. Cl. 5—91 **7 Claims**



1. A pediatric bed comprising, in ombination: a body support enclosure having a pair of ends and sides, a mattress and mattress-support frame suspended from the lower portion of said ends, a base for support of said enclosure, said enclosure being adjustable vertical relative to said base by lift means for raising and lowering the elevation of said bed, said sides being slidably mounted on tracks anchored to said ends, said sides being independently movable between a first position where the top margin of said sides are at or below said mattress level, a second position wherein the top margin is substantially above said mattress and a third position intermediate said first and second positions, said sides including latch means for releasably positioning said sides in said positions, said sides when positioned in said third position having an upper portion extending generally vertically upwards, and when positioned in said second position, having a first portion extending generally vertically upwards, and a second portion above said first portion sloped inwardly over said mattress, said **178** ress-support frame being adjustable between a horizontal position and one or more angles of incline, said support frame further including means for independently adjusting the slope of the back, upper leg and lower leg support portions of said mattress relative to the horizontal. mattress-support

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3,848,279

PORTABLE CAMPING EQUIPMENT

William J. Ipsen, Jr., 823 S. 7th St., La Crosse, Wis. 54601

Continuation-in-part of Ser. No. 192,025, Oct. 26, 1971, abandoned. This application Apr. 6, 1973, Ser. No. 348,637

Int. Cl. A47c *29/00*

U.S. Cl. 5—113 **12 Claims**

1. A unitary covered camping cot foldable into a compact condition suitable for transportation by a single individual which comprises:

a. a foldable rectangular frame comprising a pair of pivotally connected lightweight U-shaped frame members, and means for pivotally connecting the open end portions of each U-shaped frame member;

b. a pair of lightweight U-shaped end support legs, the open end portion of each being pivotally connected transversely to the side portions of each U-shaped frame member in close proximity to the closed end portions of each frame member;

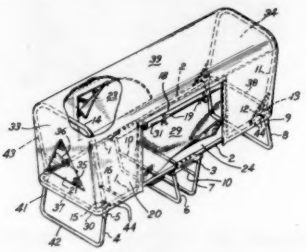
c. a lightweight U-shaped intermediate support leg, the open end portions of which being pivotally connected

transversely to the frame in close proximity to the open end portions of the frame members;

d. a single pair only of inverted, lightweight U-shaped support arms, the open end portions of each being permanently pivotally connected transversely to the side portions of each U-shaped frame member in close proximity to the closed end portions of each U-shaped frame member;

e. means attached to the frame for defining a support surface across the rectangular frame for the horizontal support of an individual;

f. a flexible cover attached to the rectangular frame having an access opening and ventilation opening therein, said arms being positioned between said cover and said support surface; and,



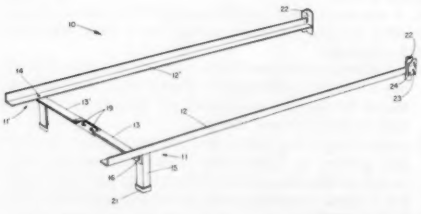
g. the camping cot being foldable, from a horizontal, open position as said inverted U-shaped support arms are in a generally upright position and define flexible side support means for said flexible cover and define a chamber above and between said support arms, said single pair of U-shaped arms defines the sole support means for said cover when said cover is in the chamber defining position, and the U-shaped support legs extend downward to maintain the cot in a stable position, to a closed, portable, compact condition where the support legs and support arms are positioned longitudinally inward against the side portions of the frame and the U-shaped frame members folded together such that the frame members are generally parallel and substantially enclose both the flexible cover and the support arms and the support legs are positioned against the exterior of the frame members.

3,848,280

TWO-LEGGED COLLAPSIBLE BED FRAME

James E. Allen, Newburgh; James M. Lashley, Richland, and C. Bernard Noelting, Evansville, all of Ind., assignors to Advance Manufacturing Co., Division of MGT Corporation, Rockport, Ind.

Filed May 23, 1973, Ser. No. 363,022
Int. Cl. A47c *14/00*
U.S. Cl. 5—202 **3 Claims**



1. A frame for connecting to a bed headboard comprising:
a first mattress supporting rail having a first hook-shaped end connectable to said headboard and a first opposite end portion;

a second mattress supporting rail parallel to said first rail and having a second hook-shaped end connectable to said headboard and a second opposite end portion, each rail having a right angle cross sectional configuration including a vertical wall integrally joined to a horizontal wall with said vertical wall of each rail spaced outwardly of each horizontal wall;

a first cross support having a proximal end pivotally mounted to said horizontal wall of said first rail at said first end portion and a distal end swingable from a position against and beneath said first support toward said second rail;

a second cross support having a proximal end pivotally mounted to said horizontal wall of said second rail at said second end portion and a distal end swingable from a position against and beneath said second rail toward said distal end of said second support and connectable therewith;

a first leg pivotally mounted to said first support beneath said horizontal wall of said first rail and swingable from a depending vertical position to a horizontal position against said first support; and,

a second leg pivotally mounted to said second support beneath said horizontal wall of said second rail and swingable from a depending vertical position to a horizontal position against said second support;

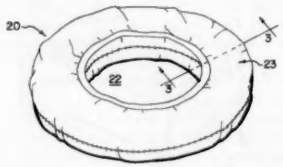
said first leg has a top edge bearing against said horizontal wall of said first rail when said first support extends toward said second rail preventing said first leg from pivoting in any direction with respect to said first support; and, said second leg also has a top edge bearing against said horizontal wall of said second rail when said second support extends toward said first rail preventing said second leg from pivoting in any direction with respect to said second support.

3,848,281

APERTURED ARTICLE AND PROTECTIVE COVER THEREFOR

Dixie I. Mathews, 4502 Abbott St., Apt. 104, Dallas, Tex. 75205

Filed Jan. 23, 1974, Ser. No. 435,726
Int. Cl. A47g *9/00*
U.S. Cl. 5—337 **11 Claims**



1. A head rest which comprises:
a cushion element formed with an aperture therethrough; and

a cover for said cushion element comprising four sheets of formable material, each sheet having a shape generally in accordance with the cross-sectional configuration of said cushion element in a principal plane therethrough including a peripheral edge shaped in accordance with the peripheral configuration of said cushion element and an interior edge defining an aperture shaped in accordance with the configuration of the aperture through said cushion element;

first and second of said sheets being joined at their peripheral edges to define a first enclosure for said cushion element;

third and fourth of said sheets being joined at their peripheral edges to define a second enclosure for said cushion element and said first enclosure;

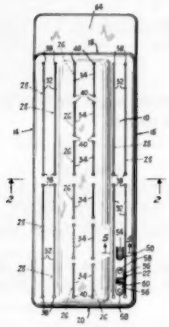
said first and second enclosures being joined at the interior edge of said second and third sheet whereby said cushion element is completely enclosed with the aperture therethrough exposed.

3,848,282

LIGHT WEIGHT FLOTATION MATTRESS

Eric A. Viesturs, 147D Hill Ct., Heritage Village, Southbury, Conn. 06488

Filed Jan. 18, 1973, Ser. No. 324,862
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 WB **12 Claims**



1. A light-weight flotation mattress, comprising, in combination:

a. a pair of thin, resilient and flexible synthetic plastic upper and lower sheets of substantially rectangular configuration, located in superposed relation and having their peripheral portions respectively joined to form a flat, closed and watertight bag of rectangular outline with oppositely disposed longitudinal side edges,

b. said bag having a stoppered filling opening, and

c. a plurality of elongate, resilient and flexible plastic tie strips in said bag and located intermediate the longitudinal side edges of the bag, said strips joining together the upper and lower sheets in spaced-apart relation,

d. said tie strips being broadside to and spaced from one another, and disposed in substantially parallel rows,

e. said rows extending longitudinally of the bag in spaced-apart relation and parallel to the opposite longitudinal side edges of the bag,

f. those tie strips of the rows which are located adjacent the longitudinal edges of the bag being narrower than strips disposed nearer the center of the bag such that the sheets are held in closer spaced relation near the longitudinal side edges of the bag than at its center.

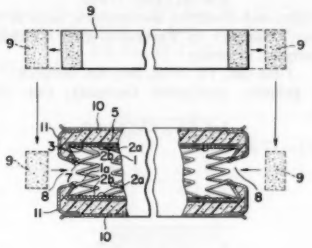
3,848,283

MATTRESS

Minoru Ikeda, Tokyo, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1973, Ser. No. 321,078
Claims priority, application Japan, Aug. 9, 1972, 47-79840; Aug. 9, 1972, 47-79841
Int. Cl. A47c *23/00*
U.S. Cl. 5—351 **3 Claims**

1. A mattress comprising a plurality of coil springs juxtaposed side-by-side one another so as to form a flat plane, at least one frame wire fixed to said springs]nd running about the periphery of said flat plane to define a top plane and to form said coil springs into a unitary spring assembly, a sheet of an elastic material covering at least said top plane and having and edge portion covering only a portion of the side of said spring assembly and being formed with first surface means, second surface means opposing said first surface means in spaced relation thereto, said first surface means diverging outwardly with respect to the plane of said second surface means, said first and second surface means defining a void space around the side periphery of said spring assembly,



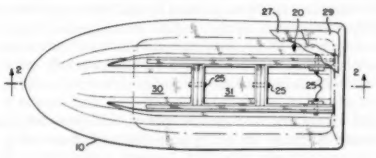
an endless elastic stretchable foam block filling said void, said elastic foamed block being in its vertical plane in a state of compression, said elastic foamed block having a normal inner width or length, when at no degree of stretch, less than the length or width of said block in said void, whereby said endless block in said void is under forces which tend to draw said block inward said first and second surface means constituting means for exerting a vertical compression against said block and for retaining said block in said void.

3,848,284

STRINGER SYSTEM FOR GLASS FIBER-REINFORCED BOAT HULLS

David T. Livingston, Seattle, Wash., assignor to Reinell Boats, Inc., Marysville, Wash.

Filed Nov. 14, 1973, Ser. No. 415,567
Int. Cl. B63b *5/00*
U.S. Cl. 9—6 **10 Claims**



1. A custom-molded stringer member for positioning in the interior of a glass fiber-reinforced resin hull of a boat to provide stiffening for the hull of the boat and support for the floor and transom of the boat, comprising:

a stringer member including (1) one or more molded, rigid, synthetic foam beams extending essentially parallel to the length of hull of the boat having an essentially planar upper surface and a lower surface adapted to fit the contour of the qull of the boat]nd (2) one or more rigid cross braces extending between the beams, each having a planar upper surface and a lower surface adapted to fit the contour of the hull of the boat,

one or more layers of glass fiber-reinforced resin over the stringer member and intersection of the stringer member with the hull of the boat for securing the stringer member to the boat hull and making it an integral part thereof,

a floor member adhered to the upper surface of the stringer member, and

one or more layers of glass fiber-reinforced resin laid over the floor member and intersection between the floor member and boat hull.

3,848,285
MACHINING TOOL

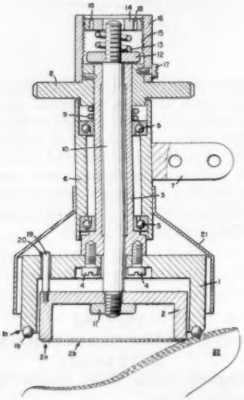
Dieter Braun, and Wolfram Kortendieck, both of Stuttgart, Germany, assignors to Fortuna-Werke Maschinenfabrik AG, Stuttgart, Germany

Filed Oct. 18, 1973, Ser. No. 407,516

Claims priority, application Germany, Oct. 18, 1972, 2250980

Int. Cl. A43d *25/00*

U.S. Cl. 12—17 R **7 Claims**



1. A machining tool, especially for use in connection with the manufacturing of shoes, which includes: bearing means, spindle means rotatably supported by said bearing means, first rotatable tool means connected to said spindle means for rotation with the latter, second rotatable tool means having the axis of rotation thereof substantially coaxially arranged with regard to the axis of rotation of said first tool means, and resilient elastic means interposed between said second rotatable tool means and said spindle means, said first and second tool means respectively being provided with machining surfaces located closely adjacent to each other so as to be adapted substantially simultaneously to act upon a workpiece to be machined thereby.

3,848,286
METHOD OF AND APPARATUS FOR CUSTOM MOLDING FOOTWEAR

Anthony J. Kahmann, 3032 Galena Ave., Simi, Calif. 93065

Filed Mar. 11, 1974, Ser. No. 449,963

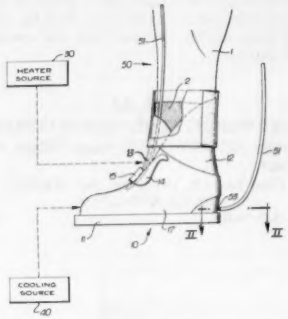
Int. Cl. A43d *9/00*; **A43b**

U.S. Cl. 12—142 P **13 Claims**

1. A method of forming a boot or shoe of moldable material to better conform it to a user's foot after having placed the boot on the user's foot including the steps of:

a. applying a vacuum beneath said boot;

b. applying sufficient heat to the boot for the boot material to become moldable while maintaining the vacuum so



that the vacuum will cause the boot to mold towards the foot to conform thereto.

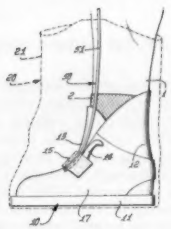
3,848,287
METHOD AND APPAPATUS FOR CUSTOM MOLDING SHOES AND BOOTS

James Simonsen, 18522 Pacific Coast Hwy., Malibu, Calif. 90265

Filed Mar. 15, 1974, Ser. No. 451,352

Int. Cl. A43b ; A43d *9/00*

U.S. Cl. 12—142 P **6 Claims**



1. A method of forming a boot or shoe of moldable material to better conform it to a user's foot after having placed the boot on the user's foot including the steps of:

a. surrounding the boot with a flexible, air tight material with a melting temperature higher than that of the molding temperature of the boot;

b. making an air tight seal between the flexible, air tight material and the boot;

c. applying a vacuum beneath said flexible air tight materials;

d. applying sufficient heat to the boot for the boot material to become moldable while maintaining the vacuum so that the vacuum will cause the boot to mold toward the foot to conform thereto.

3,848,288
SAFETY LOCK FOR BASCULE BRIDGE

Lawrence I. Richards, and Ronald R. Gould, both of Elk Grove Village, Ill., assignors to Autoquip Corporation, Chicago, Ill.

Filed May 14, 1973, Ser. No. 360,118

Int. Cl. E01d *15/06*

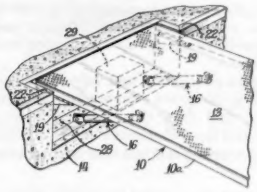
U.S. Cl. 14—41 **10 Claims**

1. In a bascule bridge apparatus for spanning an area which apparatus comprises a foundation member at one side of said area and forming a pivotal bridge support, a bridge member

having one end pivotally mounted on said support, a power device connected to the bridge member to pivot the bridge member between a horizontal position and an erect position, and a safety device to hold the bridge member in the erect position to prevent accidental lowering of the bridge member, the improvement wherein:

said foundation member forming abutment means immediately adjacent said support;

said safety device including blocking means movably attached to one of said members adjacent said one end of the bridge member and movable, only when said bridge member is in the erect position,



to a first position in juxtaposition to the other member so as to contact said other member should said bridge member start to lower and thereby block further downward movement of the bridge member, and

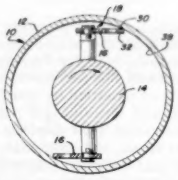
to a second position at which the blocking means is clear of said other member so that the bridge member can freely move down and up, and

power means interconnecting the one member and the blocking means to move said blocking means between its two positions.

ERRATUM

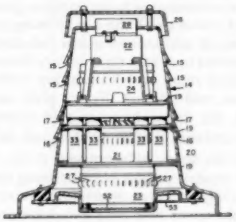
For Class 15—79 see:
Patent No. 3,849,043

3,848,289
SCRAPER BLADE
Thomas H. Bachmann, New Albany, Ind., assignor to Chemetron Corporation, Chicago, Ill.
Filed Apr. 16, 1973, Ser. No. 351,456
Int. Cl. F28g *3/12*
U.S. Cl. 15—246.5 **6 Claims**



1. In a scraped-surface apparatus comprising a fluid container having a substantially cylindrical wall, a rotatable shaft disposed axially thereof defining an annular fluid chamber for holding fluid being treated, and one or more scrapers driven by said shaft extending outwardly thereof and including outer edges for scraping fluid from the inside surface of said cylindrical wall, each scraper defining an acute angle with respect to a tangent drawn at its point of contact with said wall, the improvement wherein each scraper comprises a blade of a polyphenylene sulfide material filled throughout the entire blade with a reinforcing filler, said scraping edge having a substantially perpendicular included angle.

3,848,290
RINSE METHOD AND MACHINE
Charles Ross Bates, 140 Wortham Ct., Mountain View, Calif. 94040
Continuation of Ser. No. 212,587, Dec. 27, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,348
Int. Cl. A47l *7/00*
U.S. Cl. 15—321 **2 Claims**



1. An improved carpet cleaning machine of the type adapted to deposit and retrieve rinse liquid from carpets for the purpose of cleaning the carpet, comprising:

a hand-held implement having a handle positioned to be grasped by the operator and having one end adapted to be moved across the carpet being cleaned;

means carried by the one end of the implement and adapted to deposit rinse liquid onto the carpet from a source for spraying said liquid onto the carpet;

means adjacent said implement for controlling the quantity of rinse liquid being sprayed onto the carpet, said implement also including at said one end channel means adapted to retrieve the rinse liquid from the carpet and transmit the liquid away from the carpet;

a portable liquid holding tank attached to the implement to receive the rinse liquid retrieved from the carpet for retaining the majority of said rinse liquid;

a suction power unit affixed immediately adjacent to said holding tank for creating a vacuum flow directed through said one end of said implement for pulling the rinse liquid from the carpet and through the implement into the holding tank and for sucking wet air upwardly from said holding tank, said power unit comprising a rigid unitary frame adapted for attachment to the holding tank, the frame including a base plate having an opening centrally thereof and an interior cavity extending from said base plate, a plurality of conduits having the upstream end of each opening into said base plate, said conduits surrounding said interior cavity and serving to prevent a flow of wet air from entering said interior cavity, each of said conduits opening at the downstream end into an exhaust manifold, and a conduit divider plate having openings to accommodate said conduits, said conduit divider plate being positioned intermediate the upstream and downstream ends of said conduits and orthogonally thereto, the second end of said hand-held implement being attached through a flexible hose to said holding tank at a point above the normal full level of liquid within said holding tank, whereby a liquid-air combination is drawn through the one end of the implement, then passed through said second end of the implement and into the holding tank by air being sucked through said implement by the power unit whereby the great majority of the liquid upon entry of the liquid-air combination into the holding

tank drops from the air into the container portion of the holding tank while the wet air is sucked upwardly;

a first electric motor-fan combination mounted to said base plate with the motor portion thereof within said interior cavity and the fan portion thereof extending outside said interior cavity adjacent the upstream ends of said conduits and in position to pump wet air through said conduits around said interior cavity and into said exhaust manifold, the wet air exiting the fan of said first electric motor-fan combination being thrown out therefrom in a direction substantially perpendicular to the direction of flow through said conduits;

a second electric motor-fan combination rigidly mounted exteriorly to said rigid unitary frame and centrally on said exhaust manifold, to receive and further pump the air from said holding tank, the motor portion of said second motor-fan combination being within a protective housing to prevent contact with the wet air being propelled by the fan portion of said second motor-fan combination;

a cover attached over said rigid unitary frame and conforming in mated vapor seal relationship to the edges of said base plate, said conduit divider plate and said exhaust manifold, the space between said cover, said exhaust manifold and said conduit divider plate defining an intake duct and the space between said cover, said base plate and said conduit divider plate defining an exit duct, said cover having discharge openings thereon above the mating of said cover with said exhaust manifold to permit discharge of the flow of wet air driven from said fan of said second motor-fan combination, said cover also having a set of intake openings thereon above the mating of said cover and said conduit divider plate and below the mating of said cover and said exhaust manifold, said cover further having a set of exit openings thereon above the mating of said cover and said base plate and below the mating of said cover and said conduit divider plate, said intake openings permitting inflow and said exit openings permitting outflow of air to cool the windings of said first motor, said cover still further having an opening adjacent the upper end thereof to permit an impeller on the drive shaft of said second motor to draw dry air to cool said second motor, said dry air after cooling said second motor being mixed with the flow of wet air leaving the fan of said second motor-fan combination and exiting therewith through said discharge openings, said cover extending beyond said base plate and being attached to said holding tank.

2. An improved carpet-cleaning machine as in claim **1** wherein said first motor includes an impeller mounted on the drive shaft thereof opposite the end on which said fan of said first motor is attached, said impeller serving to pull a flow of dry cooling air through said intake openings and said intake ducts and over the windings of said first motor and then to propel said dry cooling air from the windings of said first motor through said exit duct and out of said exit openings.

3,848,291

CLEANING HEAD FOR CLEANING CARPETS AND THE LIKE IN SITU

George A. Morse, Billerica, Mass., assignor to Carpetech Corp., Everett, Mass.

Filed Mar. 1, 1972, Ser. No. 230,886
Int. Cl. A47l 7/00
U.S. Cl. 15—322 **3 Claims**

1. In a cleaning head for use with ancillary equipment for cleaning carpets and the like comprising a vacuum source including a vacuum hose adapted to be connected to said cleaning head and a source of cleaning solution including a cleaning fluid supply hose adapted to be connected to said cleaning head, the combination comprising:

a. a floor head assembly having a front and rear portion and comprising vacuum nozzle means adapted to be connected to said vacuum hose for applying suction to a surface being cleaned, solenoid actuated valve means having an open and a closed position, and cleaning fluid sprayer means for spraying cleaning fluid to impinge on the surface being cleaned, said sprayer means having a fluid inlet and said valve means being coupled to said fluid inlet;

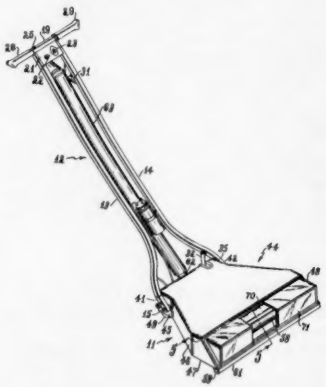
b. a handle assembly pivotally connected to said floor head assembly, said handle assembly comprising hand grip means and first and second hollow elongated members, said hand grip means comprising first and second hand grip members and an enclosure rigidly attached to said elongated members, said elongated members extending between said hand grip means and said floor head assembly and being connected to said floor head assembly rear portion;

c. fluid coupling means communicating with the interior of said first elongated member adjacent said hand grip means for coupling said first elongated member to said supply hose;

d. hose means connecting said valve means to the interior of said first elongated member adjacent said floor head assembly, said first elongated member being sealed whereby said first elongated member in combination with said fluid coupling and said hose means define a fluid flow path;

e. an electrical plug carried by said enclosure and adapted for connection to an electrical power cord;

f. an on-off switch carried by said enclosure and coupled to said electrical plug;



g. electrical conductor means extending between said hand grip means and said floor head assembly and disposed in part in said second elongated member and connecting said switch and said solenoid valve; and

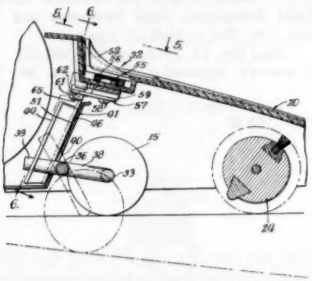
h. electric light means carried by said floor head assembly front portion, said electric light means comprising an elongated fluorescent light disposed within fluorescent light enclosure means, and additionally including a weight carried within said fluorescent light enclosure means for providing a predetermined pressure by said front portion on the surface being cleaned, said floor head assembly including a metal cover member having a generally rectangular rear portion, a generally trapezoidal middle portion, and a generally rectangular front portion having a rearwardly sloping front surface for receiving said light means, said solenoid valve means is carried within said cover member and attached to one side of the middle portion thereof, and said light enclosure means is generally triangular in cross section and carried by said sloping front surface.

3,848,292

ADJUSTABLE WHEEL MOUNTING MEANS

Erwin E. Nordeen, St. Paul, and Clifford H. Olson, Jr., Chisago City, both of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 30, 1972, Ser. No. 239,430
Int. Cl. A47l *5/34*
U.S. Cl. 15—339 **14 Claims**



1. In a vacuum cleaner having a carriage, front wheels, rear wheels rotatably carried by the carriage, a nozzle having a front portion and a top wall, means for carrying the nozzle on the carriage, and structure for adjusting the height of the front portion of the carriage relative to a subjacent surface on which said wheels are disposed including axle means for journalling said front wheels for rotation about a borizontal wheel axis, means mounting the axle means to said carriage for pivotal movement about a horizontal pivot axis parallel to and spaced from said wheel axis, a control member adjustably carried by the nozzle, locking means for releasably retaining the control member in any one of a plurality of different preselected adjusted positions, and improved means for positioning the axle means comprising a connector having a portion pivotally mounted on said carriage and means movably connected between said connector and said control member, said connector portion having a lower force transmitting member spaced substantially below said top wall substantially at the level of said wheel axis for engaging a portion of said axle means spaced from said pivot axis defining means for effectively positively pivoting said axle means in one direction of pivoting about said pivot axis as a result of adjustment of said control member in one direction of adjustment and thereby adjustably raising said front portion of the carriage relative to the subjacent surface to provide an adjustable mounting of the vacuum cleaner suitable for use with different pile height floor coverings.

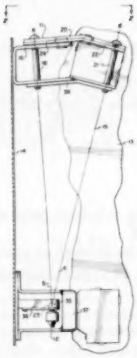
3,848,293

DUAL ACTION CONICAL DOOR HINGE SYSTEM

Joseph H. Marchione, and John J. Skubal, both of Rockford, Ill., assignors to Atwood Vacuum Machine Co., Rockford, Ill.

Filed Mar. 19, 1973, Ser. No. 342,539
Int. Cl. E05d *3/06*
U.S. Cl. 16—163 **12 Claims**

1. In a door hinging construction for pivotal mounting of a door on a vehicle body, a pair of vertically spaced hinges in coaxial relationship, the upper one of said hinges comprising a first fixed member mounted on the vehicle body and a second movable member mounted on the door, each of said members having thereon a substantially horizontal segmental planetary gear portion, the teeth of which are in rolling meshing engagement, upright pintles on said members at the centers of the arcs of the respective segmental planetary gears, these pintles being inclined relative to one another on axes converging downwardly toward the lower hinge, and links pivoted to the opposite ends of said pintles serving to keep the segmental planetary gear teeth in mesh, the lower one of said hinges comprising a first fixed member mounted on a vehicle body, and a small movable member mounted on the door, these two members having a universal joint connection pivotally connecting the members for universal pivotal movement about the point of convergance of the aforesaid axes, and door



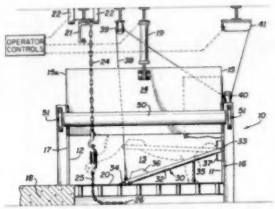
throwout control means on the upper one of said hinges which in part-way opening of the door prevents throwout of the door relative to said hinge but which in further opening of the door allows a predetermined extent of the door throwout relative to said hinge, said door throwout control means in the closing of the door reversing its functioning.

3,848,294

HANDLING LIVE ANIMALS TO PREPARE THEM FOR SLAUGHTER

Charles R. Taylor; Albert J. Bernhardt, both of Sterling; Jerry L. Bradford, Rock Falls, all of Ill., and Donald J. Willems, Sioux City, Iowa, assignors to Armour and Company, Phoenix, Ariz.

Filed July 25, 1973, Ser. No. 382,315
Int. Cl. A22b *5/02, 1/00*
U.S. Cl. 17—45 **11 Claims**



1. A method of shackling an animal comprising driving the animal into an enclosure having a side door in closed position, raising the rear end of the animal by elevating a hoist member located in front of the animal's rear leg and under the rearward portion of the animal's belly to raise the hind feet of the animal off the floor of the enclosure, opening said side door, attaching a shackle to one of said animal's hind legs, and hoisting the shackled animal through the opening provided by the open door and upwardly on the outside of said enclosure.

3,848,295

PROCESS OF MAKING A BULKED PADDING WEB

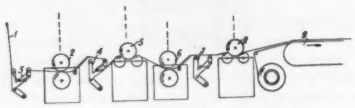
Robert Bolliand, and Claude Saligny, both of Lyon, France, assignors to Rhone-Poulenc Textile, Paris, France

Continuation-in-part of Ser. No. 161,627, July 12, 1971, Pat. No. 3,737,950. This application Feb. 5, 1973, Ser. No. 329,544

Claims priority, application France, July 10, 1970, 70.26734

Int. Cl. D01d *11/02*

U.S. Cl. 19—65 T 8 Claims



1. Method of making a bulked padding web, said method comprising the steps of

a. feeding tensional tow through an upstream pair of parallel rollers comprising an upper upstream roller and a lower upstream roller;

b. thereafter feeding said tow through a downstream pair of parallel rollers comprising an upper downstream roller and lower downstream roller, wherein said downstream pair of rollers are substantially parallel to said upstream pair of rollers; and

c. while rotating each roller in the same direction, relative to the direction of travel of said tow, and at a different peripheral speed for each roller of each pair of rollers from the other roller of the pair, the upstream pair of rollers having a higher ratio of peripheral speeds than the downstream pair, the ratio of peripheral speeds of said downstream rollers being less than 5, and the upper rollers having a higher peripheral speed than the lower rollers;

whereby a bulked padding web is obtained.

3,848,296

THE OPENING AND INDIVIDUAL SEPARATION OF FIBERS

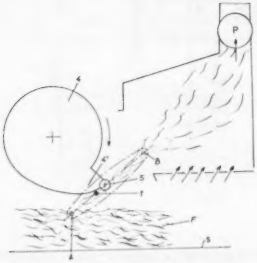
Bernard Rudloff, Marckolsheim (Bas-Rhein), France

Filed Dec. 29, 1972, Ser. No. 319,643

Claims priority, application France, June 20, 1972, 72.23096

Int. Cl. D01g *7/06*

U.S. Cl. 19—81 4 Claims



1. In a device for the separation of textile fibres and the like from a bale or mass of said fibres, comprising an elongated horizontally disposed member, means mounting said member at its ends for oscillatory movement up and down means retaining a said bale or mass of said fibres beneath said member, impulse means to impart oscillations to said member to cause said member to strike the fibres of said bale or mass thereby to separate the fibres of said bale or mass, and means to remove from the vicinity of the bale or mass fibres thus separated therefrom.

3,848,297

MEANS FOR PREVENTING INVERSION OF MOVABLE BOTTOM OF SLIVER COLLECTION CAN

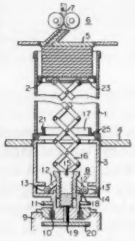
Shozo Ohashi, Itami; Mitsuo Mori, Toyota, and Satoshi Oyobe, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi Prefecture and The Toyo Fibre Co., Ltd., Tokyo, both of, Japan

Filed Oct. 24, 1972, Ser. No. 300,257

Claims priority, application Japan, Oct. 30, 1971, 46-100474

Int. Cl. B65h *54/80*

U.S. Cl. 19—159 R 6 Claims



1. A sliver collection can, open at the lower end and upper end thereof, for use with a device for accomodating coils of the sliver, said device including an reciprocally movable member which can be extended into said can and retracted therefrom through the lower open end of said can, said sliver collection can comprising: a cylindrical body having open opposite ends, a circular bottom member located within said can and adapted for movement along the inner wall of said can between an uppermost and bottommost position and being moved along said wall by said reciprocally movable member which contacts said bottom member when said reciprocally movable member extends into said can, said bottom member having flange means depending downwardly, and a support member coupled to the lower open end of said can to provide a lower end stop for said bottom member, said support member having a central opening for passage of said movable member therethrough and having a circular flange extending upwardly within said can, said bottom member flange means and said support member flange interacting to limit inclination of said bottom member relative to sald can when sald can is in a tilted position, said bottom member flange means having a length slightly greater than the distance between the inner wall of said can and the flange extending upwardly within said can from said support member whereby said bottom member is prevented from becoming inverted, without appreciably reducing the volume within said can in which sliver may be collected.

3,848,298

SLIDE FASTENER

Alfons Frohlich, Essen, Germany, assignor to Opti-Holding AG, Glarus, Switzerland

Filed Apr. 5, 1973, Ser. No. 348,110

Claims priority, application Germany, Apr. 5, 1972, 2216282

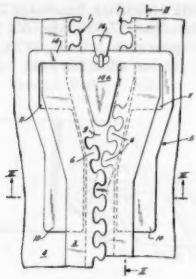
Int. Cl. A44b *19/14*, *19/26*

U.S. Cl. 24—205.1 R 12 Claims

1. A slide fastener comprising:

two elastically deformable fastener halves provided with complementary coupling formations; and

a generally plate-shaped slider having two wings separated by an elongate gap accommodating said coupling formations, each of said fastener halves including a pair of rigidly interconnected substantially parallel flanges bracketing a respective one of said wings, the latter being



provided with guiding edges adjacent said gap in camming engagement with said coupling formations for interlinking same upon a relative displacement of said slider in a fastener-closing sense in the longitudinal direction of said gap, said slider further including bridge means joining said wings to each other.

3,848,299

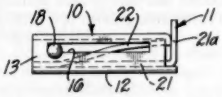
JEWELRY CLASP

Ernest F. Gray, 3246 San Amadeo, Apt. 0, Laguna Hills, Calif. 92653

Continuation-in-part of Ser. No. 296,069, Oct. 10, 1972, abandoned. This application Dec. 17, 1973, Ser. No. 425,213

Int. Cl. A44b *17/00*

U.S. Cl. 24—230 SC **7 Claims**



1. A clasp comprising a receptor adapted to be connected to one end of an article to be fastened, said receptor having a base a pair of substantially vertical side walls, a pair of aligned elongated horizontally directed slots formed in said side walls substantially parallel throughout to said base, said receptor having a downwardly directed stop member adjacent to its free end, a spring clip adapted to be connected to the other end of said article, said spring clip having a free end longitudinally insertable into the free end of said receptor, said spring clip having at least one integral spring finger extending angularly upwardly therefrom, said spring finger having one end thereof adapted to be depressed by and pass beneath said stop member upon the insertion of said spring clip into said receptor, said end adapted thereafter to be automatically moved upwardly by the resilience of said spring finger into locking engagement behind said stop member, and a release member extending transversely across said receptor and having its opposite ends slidably extending through said horizontal slots, each end of said release member having a protuberance thereon disposed on the outside of said receptor to facilitate manual engagement and simultaneous sliding movement of both ends of said release member with respect to said receptor, said release member being adapted upon movement thereof toward said stop member to engage and move said end of said spring finger downwardly beneath said stop member to permit the withdrawal of said spring clip from said receptor.

3,848,300

NIP ROLL ASSEMBLY FOR STUFFER BOX CRIMPING DEVICE

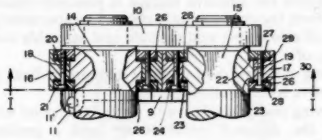
Rudolf Fuchs, Kassel, and Kurt Glieschke, Bonaforth, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jan. 15, 1973, Ser. No. 323,945

Claims priority, application Germany, Feb. 11, 1972, 7205130

Int. Cl. D02g *1/12*

U.S. Cl. 28—1.6 **6 Claims**



1. In a stuffer box device for crimping synthetic filaments including a stuffer box and a pair of cooperating nip roll assemblies which are disposed adjacent one end of said stuffer box and are driven in opposite directions to feed said filaments into said box, each said assembly including a shaft and a nip ring joined to said shaft, the improvement which comprises an assembly in which each nip ring is fitted to a collar of its corresponding shaft with a transition fit, two clamping rings being disposed about the corresponding shaft of each nip ring on the two sides, respectively, of said collar, and means for removably securing said clamping rings to each other so as to press the opposing faces of said clamping rings against axially outwardly facing surface portions of said collar and of the corresponding nip ring, thereby coupling said shaft for torque transmission to said nip ring.

3,848,301

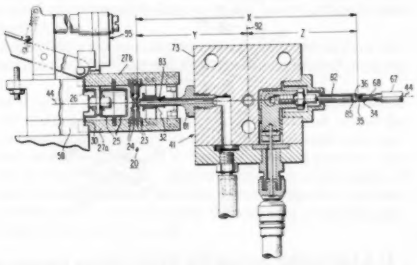
METHOD OF DIRECTLY SPACING A CATHODE-TO-GRID ASSEMBLY FOR A CATHODE-RAY TUBE

Leon Lester Gruber, East Petersburg, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 6, 1972, Ser. No. 304,012

Int. Cl. B65d *63/08*

U.S. Cl. 29—25.16 **7 Claims**



1. In the manufacture of a cathode-ray tube cathode-grid assembly in which a cathode having an emissive surface is mounted on a cathode support in axial alignment therewith and in which the emissive surface is precisely spaced a distance S from the confronting surface of an apertured grid, the method of assembling said cathode-grid assembly comprising the steps of,

a. fixing said grid and cathode support in final positions relative to each other on a first carriage assembly, said first carriage assembly including a slidable platform,

b. mounting said cathode on a second carriage assembly,

c. adjusting at least one of said first and second carriage assemblies to locate said cathode and said grid a predetermined distance apart,

d. moving said slidable platform said predetermined distance minus the spacing distance S to locate said cathode within said cathode support, and

e. fixing said cathode within said cathode support.

2. In the manufacture of a cathode-ray tube cathode-grid assembly in which a cathode having an emissive surface is mounted on a cathode support in axial alignment therewith and in which the emissive surface is precisely spaced a distance S from the confronting surface of an apertured grid, the method of assembling said cathode-grid assembly comprising the steps of,

a. fixing said grid and cathode support in final positions relative to each other,

b. moving said grid relative to a reference point while sensing the distance therebetween until a predetermined spacing between said point and said grid is obtained,

c. moving said cathode relative to said reference point while sensing the distance therebetween until a predetermined spacing between said point and said cathode is obtained, whereby a predetermined measured distance between said cathode and said grid is obtained, and

d. moving said grid relative to said cathode an amount equal to the difference between said predetermined measured spacing and said spacing distance S, thereby spacing said cathode emissive surface said distance S from said grid.

3,848,302

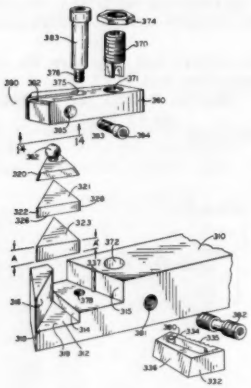
MOUNTING FOR TOOL BITS

Arthur Franklin Hudson, Box 1025, Huntington, Ind. 46750

Continuation of Ser. No. 173,528, Aug. 20, 1971, abandoned. This application July 31, 1972, Ser. No. 261,633

Int. Cl. B26d *1/12*

U.S. Cl. 29—96 **1 Claim**



1. A tool holder for tool bits having cutting surfaces comprising: a tool cutting end having a bit-receiving area formed therein; a tool bit mounted in said receiving area; movable wedge means disposed within said area and movable therein to define the operative position of said tool bit and including a locking means and a plurality of spaced locking means adapted for interlocking with a projecting portion within said area to define its position, and clamping means for holding said wedge and tool bit in their respective positions; and wherein said clamping means includes a chip breaking clamping pad having a swivable connection with said clamping means to communicate hold down force on said tool bit at its position within said seat; and including means for gripping said swivable connection to prevent angular movement of said chip breaker clamping pad from its adjusted position.

3,848,303

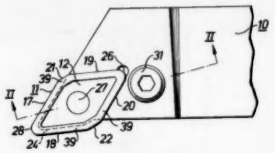
CUTTING INSERT AND CUTTING TOOL ASSEMBLY

Kurt Heinrich Albert Erich Faber, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Division of Ser. No. 257,530, May 30, 1972, Pat. No. 3,777,341. This application July 16, 1973, Ser. No. 379,205

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 **4 Claims**



1. A tool holder and cutting insert combination for copy turning consisting of a tool holder (**10**) and a basically rhombic insert (**11**), said insert having edge portions (**21, 22**) which separate pairs of edges (**17** and **18** from **19** and **20**) extending towards the cutting tips and which extend symmetrically relative to the longest diagonal and substantially parallel thereto, at least one of a pair of edges extending to one cutting tip being formed as a main cutting edge and the insert having substantially flat side surfaces (**12, 13**) being located at a right angle of the intersection of the edge surfaces (**14, 15, 16**), means being uisposed in said yolder t6 securely clamp the insert against a bottom supporting surface of basically rhombic configuration and complementary side supports in a recess in said holder, characterized in that the recess is formed in such a manner that, with the insert clamped in position in the holder **10**, the edge forming the main cutting edge (**18**) as well as the edge forming the out-facing cutting edge (**22**) located adjacent thereto are laid bare in their entirety with respect to said holder **10** for enabling those two cutting edges (**18, 22**) to be brought into cutting engagement with a workpiece.

3,848,304

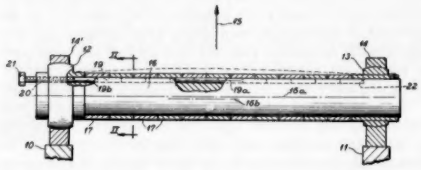
VARIABLE CURVATURE BEAM

Robert F. Lucas, Janesville, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Feb. 7, 1973, Ser. No. 330,212

Int. Cl. B21b *13/02*

U.S. Cl. 29—116 AD **7 Claims**



1. An adjustable curvature roll structure comprising in combination:

a roll body having sufficient flexibility over its length to be bowed about its axis;

a resiliently flexible structural axle upon which said body is rotatably mounted with said axle adapted to be supportably mounted at its end; and

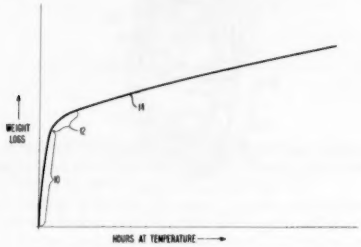
a compression means extending axially along the axle offset from the axis thereof connected to the axle at each end, said compression means having sufficient flexibility so

that it provides no increase in section modulus to the axle and being in the form of a plurality of short separated units in axial compression contact with each other.

3,848,305
ROLL FOR CONTACT FUSING THERMOPLASTIC PARTICLES TO SUBSTRATES

Paul D. Jachimiak, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,975
Int. Cl. B21b *31/08*
U.S. Cl. 29—132 **3 Claims**



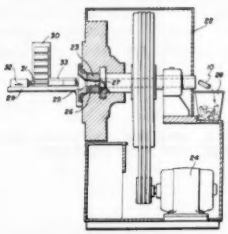
1. A roll for fusing thermoplastic granular material to a substrate, said roll having a cylindrical core, and a coating on said core of a silicone elastomeric material, the improvement comprising:

said coating having the volatile components thereof, reduced to a level at which the coating has, under in service conditions, a substantially constant rate of weight loss.

3,848,306
PROCESS FOR PRODUCING A BEARING

John W. Morse, Shrewsbury, Mass., assignor to Engineering Plastic, Inc., Westboro, Mass.

Division of Ser. No. 316,221, Dec. 18, 1972, abandoned, which is a continuation of Ser. No. 138,937, April 30, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,698
Int. Cl. B23p *11/00*
U.S. Cl. 29—149.5 NM **3 Claims**



1. A process for producing a bearing, comprising the steps of:

a. preparing a flat layer of plastic and a flat sheet of perforated metal,

b. bonding the two layers together in flat condition,

c. performing a preliminary bending of the bonded layers into a rough tube,

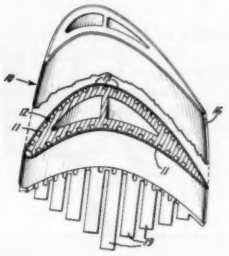
d. swaging the tube into a perfect cylindrical condition, and

e. finishing the bearing.

3,848,307
MANUFACTURE OF FLUID-COOLED GAS TURBINE AIRFOILS

Paul H. Kydd, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 240,616, April 3, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 400,137
Int. Cl. B21k *3/04*; **B23p** *15/04*
U.S. Cl. 29—156.8 B **6 Claims**



1. In the method for applying a continuous skin over a turbine bucket core having a plurality of grooves recessed in the surface thereof and separated by ridges of the core material, in which method the grooves are filled with a first material, said bucket core surface is covered with at least one rigid layer of another material to form the bucket skin and said first material is then removed completing conversion of each groove to an empty enclosed passage for receiving, transporting and discharging coolant, the improvement comprising the steps of,

a. selecting one material for the bucket skin, said material being capable of deposition over the bucket core as a porous layer having structural integrity,

b. selecting a second material for temporarily occupying the grooves of said bucket core, said second material having a melting temperature lower than the melting temperature of said one material, said one material and the bucket core material being wet by, but not actively alloying with said second material when molten and said second material being capable of bonding said one material to itself and to said bucket core,

c. disposing said second material in each of said grooves to a level approximately flush with the outer surface of said bucket core,

d. depositing a porous coating of said one material over said bucket core and over the deposits of said second material and

e. heating the composite so formed to a temperature above the melting point of said second material and below the melting temperature of said one material until said second material melts and is drawn from said grooves into the porous coating by capillary action to empty each of said grooves, to bond said one material together and also to bond said one material to the surfaces of said bucket core in contact therewith.

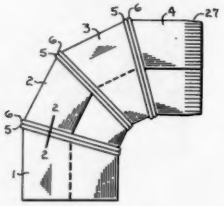
3,848,308
STOVE PIPE ELBOW

Paul W. Kaval, 5812 Monroe Rd., Conneaut, Ohio 44030

Filed June 11, 1973, Ser. No. 369,093
Int. Cl. B21d *53/00*
U.S. Cl. 29—157 A **2 Claims**

1. The method of making a swivel type stove elbow comprises the steps of forming a generally rectangular piece of sheet metal with opposite end edges having notches opposite each other, rolling the rectangular piece to a tubular shape with said end edges extending axially and with one end edge overlapping the other end edge, said notches registering and

the bottoms of the notches in each end edge being overlapped by a portion of the sheet of the other edge, and forming the material outside the notches in rigid lock seams of the type which prevents displacement or unlocking of said end edges, the end edges in the space between said adjacent lock seams having only two thicknesses of metal in overlapping relation and the adjacent lock seams being axially spaced from each other a distance sufficient to provide material on opposite sides of a cut between the lock seams in a plane oblique to the axis of the tube for forming interlocking slip joint means



between the sections formed by the cut, cutting the tubular shape in planes oblique to the axis of the tube and between adjacent lock seams, forming the material on one side of each cut into a first external annular hollow bead terminating in an inwardly extending flange, forming the material on the other side of each cut into a second external annular hollow bead joined to an internal annular hollow bead terminating in an outwardly extending flange, and assembling the sections on opposite sides of each cut with said inwardly extending flange in said internal bead and said outwardly extending flange in said first bead.

3,848,309

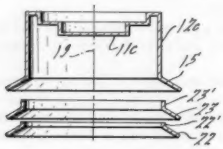
PULLEY METHOD OF MANUFACTURE

Christopher Nuss, Warren, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 12, 1973, Ser. No. 415,043

Int. Cl. B21d *53/26*; **B21k** *1/28, 1/42*

U.S. Cl. 29—159 R **13 Claims**



1. In the method of manufacturing a wheel having a hub and a radially outwardly opening annular channel, the steps of forming a bowl having a base to provide said hub and having an integral annular side flange terminating outwardly from said base in a first radially outwardly extending annular edge flange to provide one side of said outwardly opening channel, reforming said bowl to remove said first annular edge flange therefrom and to form a second radially outwardly extending annular edge flange integral with the reformed bowl at the outer periphery of said annular side flange to provide the other side of said outwardly opening channel, and securing said first annular edge flange to said reformed bowl in axially reversed relationship with respect to said second annular edge flange to provide said annular channel.

3,848,310

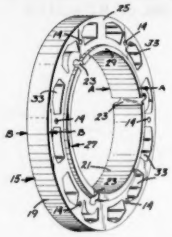
METHOD OF FORMING A TAPE REEL HUB BY EXTRUSION

Clarence I. Steinback, Edina, Minn., assignor to Acrometal Products, Inc., Minneapolis, Minn.

Filed Sept. 22, 1972, Ser. No. 291,331

Int. Cl. B21k *1/40*

U.S. Cl. 29—159.3 **9 Claims**



1. A method of forming a tape reel hub comprising the steps of:

a. heating a billet of metal to a temperature below the melting temperature of said metal;

b. extruding said billet through an extrusion die constructed for forming a longitudinally extending tubular shaped object having a longitudinal axis;

c. severing said extruded tube perpendicularly to said longitudinal axis to define tape hubs having desired widths; and

d. machining an outside surface of said tape hub to form a smooth tape engaging face.

3,848,311

METHOD AND MEANS FOR MOUNTING COINS AND THE LIKE

Leonard Anthony Fariello, Box 173, Troy Meadows Rd., Whippany, N.J. 07981

Filed Dec. 1, 1972, Ser. No. 311,385

Int. Cl. B21f *43/00*, **B23p** *13/00*

U.S. Cl. 29—160.6 **8 Claims**

1. A method for mounting an object, such as a coin or the like, comprising the steps of:

engaging the perimeter of an object, such as a coin or the like, with a frame means which bares opposite sides, that is both obverse and reverse sides, of the object; and

forming said frame means with a plurality of fastening elements extending from the perimeter of said frame means; wherein

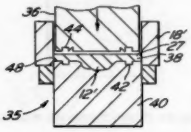
said engaging step comprises clasping an object substantially about the full perimeter thereof; and

said forming step comprises forming a plurality of filamentary fastening elements.

3,848,312
METHOD OF PRODUCING A METAL OBJECT WITH HIGH RELIEF AND HAVING A PROOF FINISH FROM POWDERED METAL

Kathleen E. Kirkham, Staten Island, N.Y., assignor to Franklin Mint Corporation, Franklin Center, Pa.

Filed Sept. 18, 1973, Ser. No. 398,361
Int. Cl. B22f *3/24*
U.S. Cl. 29—160.6 **12 Claims**



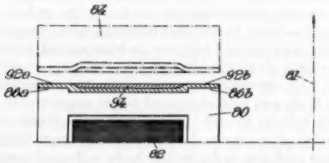
1. A method for producing a proof finish on a metal object having at least one portion of its surface area raised more than 0.100 inches in relief, comprising the steps of:

a. providing a die and die cavity, said die comprising a die recess which is engraved with the negative of the relief to be formed and which is greater than 0.100 inches in depth within said die, said die cavity disposed immediately above said die recess;
b. filling said die recess with a metal powder;
c. introducing said metal powder into said die cavity;
d. compacting said metal powder inside said die cavity and said die recess to form a relief compact;
e. sintering said relief compact at a temperature and for a time sufficient to produce a durable sintered compact, but insufficient to produce any significant dimensional change in said relief compact;
f. inserting said sintered compact in a coining press, said coining press comprising a coining die recess identical in shape and dimension to said die recess of step; (a);
g. striking said sintered relief compact to form a final relief object having a proof finish; and
h. ejecting said final relief object.

3,848,313
FRICTION ARMATURE WITH FRICTION AND MAGNETIC LININGS

Jean-Francis Guyonnet, Paris, France, assignor to Centre National De La Recherche Scientifique, Paris, France

Continuation-in-part of Ser. No. 766,153, Oct. 9, 1968, abandoned. This application May 18, 1971, Ser. No. 144,492
Claims priority, application France, Oct. 11, 1967, 67.124111; Sept. 27, 1968, 68.168044; Dec. 11, 1970, 70.44678
Int. Cl. B32b *15/00*
U.S. Cl. 29—191.2 **5 Claims**

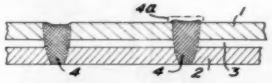


1. Friction armature comprising an annular support and a lining formed on its surface, the latter including at least one annular projection and the lining including a first layer made of a magnetic material covering the whole annular surface including the annular projection and being exposed on the lining surface above said projecting annular portion, and a second layer of a friction material exposed at the surface of said lining above the remaining portions of said support surface flush with the exposed portion of the first layer, the crystals of the material of the second layer belonging to the crystalline hexagonal system with a major proportion of their base planes **0001** substantially oriented in directions parallel to the lining surface.

3,848,314
ASSEMBLY OF SUBSTANTIALLY PARALLEL METALLIC SURFACES

Jacques Andre Stohr, Nice, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Oct. 24, 1972, Ser. No. 300,242
Claims priority, application France, Nov. 4, 1971, 71.39512
Int. Cl. B23k *15/00*
U.S. Cl. 29—191 **4 Claims**

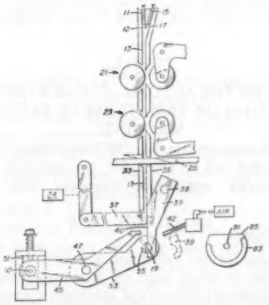


1. A heat-insulating structure comprising a stack of spaced substantially parallel plates having a small relative spacing, connecting bridges formed by electron beam welding of said plates joining said plates in pairs, said bridges defining closed compartments under vacuum between said plates, the vacuum required for the welding operations being maintained within said compartments at least one spacing system mounted between each pair of said plates, said spacing system being a wire mesh trellis, said trellis being attached to said plates at the intersection of said wires.

3,848,315
SCROLL WINDING AND LOADING APPARATUS

John N. Gade, Rush, and James D. MacKay, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 234,750, March 15, 1972, Pat. No. 3,787,954. This application Sept. 10, 1973, Ser. No. 395,470
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 B **10 Claims**



1. Apparatus for use in loading a web into a receptacle, said receptacle having a supply compartment, a takeup compartment, and a takeup core rotatably housed within said takeup compartment, said apparatus comprising:

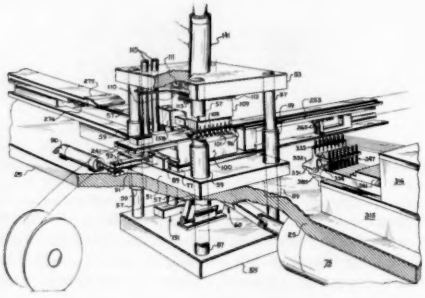
mandrel means for forming said web into a wound scroll having a free web end;
means for transferring said scroll from said mandrel means to said supply compartment;
means for positioning said free web end with respect to said core;
cup means for entering said takeup compartment to support said takeup core therewithin; and
means for attaching said free web end to said takeup core while said takeup core is supported by said cup means.

3,848,316

LEAD WIRE ASSEMBLY APPARATUS

Fransiscus Cornelius Bakermans, Shiremanstown, and William Charles Thoms, East Berlin, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 26, 1973, Ser. No. 400,909
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 DTS **10 Claims**



1. An apparatus for assembling groups of lead wires attached to terminals on a carrier strip, comprising,
a tooling station having a carrier strip feed path,
means for positioning a carrier strip on said feed path in said tooling station,
means for feeding a plurality of continuous wires substantially perpendicular to the direction of said carrier strip feed path in said tooling station,
means for pulling each of said continuous wires a predetermined distance through said tooling station,
means for severing a plurality of lead wires from said continuous wires pulled through said tooling station, and
means for attaching the severed ends of the lead wires to terminals on said carrier strip in said tooling station.

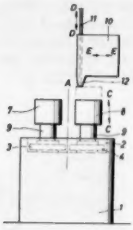
3,848,317

MACHINE FOR THE AUTOMATIC INSERTION OF SLOT INSULATIONS OR ARMATURES OF ELECTRICAL MACHINES

Otto Rist, Schwanenstrasse 34, 798 Ravensburg, Germany

Filed Oct. 4, 1973, Ser. No. 403,626
Claims priority, application Germany, Oct. 19, 1972, 2251218
Int. Cl. H02k *15/10*
U.S. Cl. 29—205 E **4 Claims**

1. A machine for the automatic insertion of prefabricated slot insulations or cover caps or armature insulations into stators or armatures or electrical machines comprising
at least two receivers holding a workpiece to be equipped, said receivers being rotatable in stepwise fashion as part of an index plate, and arranged diametrically on a movable circular indexing table and at the same radial distance from its axis of rotation,
one of said receivers with said workpiece being disposed directly below said insertion tool, and
said insulating strips, to be inserted, being insertable as



individual pieces in synchronism with said index place by said tool.

3,848,318

DEVICE FOR PLACING AND SEAM FOLDING THE BOTTOMS OF SUPPLY VALVES ON AEROSOL CONTAINERS

Giancarlo Giuffredi, Milan, Italy, assignor to Costa Tecnologie Speciali S.p.A., Milan, Italy

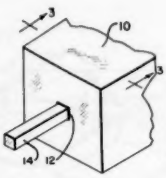
Filed Aug. 9, 1973, Ser. No. 386,994
Claims priority, application Italy, Sept. 30, 1972, 29915/72
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 B **5 Claims**

1. An apparatus for placing and seam folding the bottoms of dispensing valves on aerosol containers, and valves having tube lengths applied thereto, comprising a container bearing platform and a device overlying said platform and movable relative thereto, the device comprising a cylinder accomodating a hollow tubular body, the cross-section are, of which is larger than that of the valve bottoms, and an elongated hollow body movable within said tubular body, the end of the elongated hollow body facing said platform being shaped to form a housing seat for said bottoms and associated valves, means for providing air suction in said seat retaining a valve housed therein, and movable means operatively connected to said tubular body and said elongated body, respectively, to move the same relative to said platform and said cylinder, the apparatus being characterized by comprising seam folding pliers housed in said seat in the hollow body, a shaped portion of the pliers projecting therefrom, a rigid tube movable within the elongated hollow body and having one end thereof extending adjacent said pliers, and movable means operatively connected to the rigid tube to move the same relative to the elongated hollow body and outwardly spread said seam folding pliers.

3,848,319
PROCEDURE FOR FABRICATING ULTRA-SMALL GOLD WIRE

Paul E. Hendrickson, Wayne, Pa., assignor to Albert A. Ciardi, Jr., Philadelphia, Pa., a part interest

Filed Mar. 8, 1973, Ser. No. 339,306
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 **7 Claims**



1. The method of fabricating ultra-small precious metal or metal alloy wire comprising the steps of

A. forming a copper sleeve having a first cross-sectional size and annealing the sleeve,

1. said copper sleeve being formed with an axially aligned opening having a second cross-sectional size;

B. forming a core of precious metal or metal alloy having a third cross sectional size and annealing the core, said annealing being carried out separately from annealing the sleeve,

1. the ratio of the first cross-sectional size to the third cross-sectional size being at least five to one,
2. the second cross sectional size being formed slightly larger than the third cross-sectional size;

C. inserting the previously annealed core into the opening and then reducing the second cross-sectional size to equal the third cross-sectional size to mechanically bond the core to the sleeve;

D. reducing the cross-sectional size of the sleeve and the cross sectional size of the core in the same ratio as the initial sizes by successive size reductions until the core is reduced to the ultra-small wire size range, and

E. removing the sleeve chemically from the core to produce an ultra-small precious metal wire.

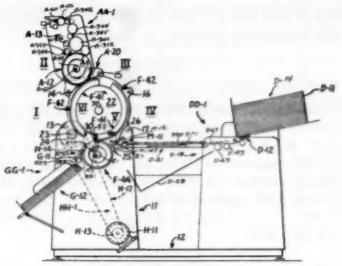
3,848,320
PRINTING PRESS METHOD OF ASSEMBLY

William Ward Davidson, Jr., Port Washington, Long Island, N.Y., assignor to Van Vlaanderen Machine Company, Paterson, N.J.

Continuation-in-part of Ser. No. 73,161, Sept. 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 658,385, Aug. 4, 1967, abandoned. This application Mar. 16, 1972, Ser. No. 235,221
Int. Cl. B41f *7/08, 31/30*
U.S. Cl. 29—428 **37 Claims**

1. The method of manufacturing and producing a variety of different, structurally related, printing presses with diverse printing function capabilities including the steps of:

1. constructing a plurality of like printing cylinder support frame structures with each such frame structure constructed for supporting upper and lower printing cylinders therein and with each such frame structure being formed and constructed to provide a plurality of like module mounting stations for the mounting of self-contained plate cylinder modules of self-contained inking modules about the upper portion of an upper printing cylinder mounted in said support frame structure;
2. constructing a plurality of pairs of upper and lower printing cylinders with all of the lower printing cylinders having the same effective printing diameter and with the upper printing cylinder in each pair having an effective printing diameter which is a whole integer multiple, greater than one, of the effective printing diameter of the lower printing cylinder;
3. constructing a plurality of like self-contained plate cylinder modules with each such plate cylinder module comprising a frame structure in which is mounted a plate cylinder having an effective printing diameter equal to the effective printing diameter of the lower printing cylinders, and in which is also mounted means for inking a plate mounted on the surface of said plate cylinder, the said plate cylinder module frame structures each including mounting means which adapt them to be mounted at any of the module mounting stations of a printing cylinder support frame structure;
4. constructing a plurality of self-contained inking modules with each inking module comprising a frame structure in



which is mounted an inking mechanism for inking a plate mounted on the surface of an upper printing cylinder, the said inking module frame structures each including mounting means which adapt them to be mounted at any of the module mounting stations of a printing cylinder support frame structure;

5. assembling a pair of said upper and lower printing cylinders into each of said support frame structures in rotational, tangential relationship to each other to define a printing bite therebetween; and
6. selectively assembling plate cylinder modules and inking modules in the mounting stations of said support frame structures with some presses having a plate cylinder module in one mounting station and other presses having an inking module in the same mounting station as the plate cylinder module of said first mentioned presses.

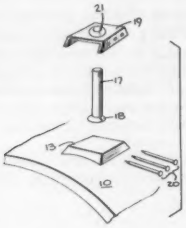
3,848,321
METHOD OF FABRICATING A CONSTRICTABLE TUBE VALVE ELEMENT

Irving D. Press, West Orange, N.J., assignor to Resistoflex Corporation, Roseland, N.J.

Division of Ser. No. 162,407, July 14, 1971, Pat. No. 3,791,617. This application July 16, 1973, Ser. No. 379,248
Int. Cl. B23p *11/00*
U.S. Cl. 29—432.2 **4 Claims**

1. The method of fabricating a flexible plastic tube for a constrictable tube valve with the tube having two bosses spaced apart along a longitudinal element on one side of the tube and two further bosses similarly spaced along a longitudinal element on the diametrically opposite side of the tube such that pairs of said bosses are in substantially diametral opposition, and with individual connecting elements secured to a corresponding one of said bosses, said method comprising the steps of extruding a tube of flexible plastic having a generally uniform wall thickness except for two ribs of greater radial dimension extending longitudinally of the tube on the radially

outer surface thereof, said ribs being located along diametrically opposite elements of the tube, removing longitudinal



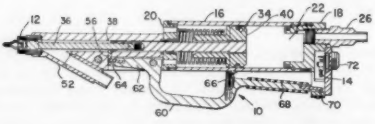
sections of said ribs to leave said bosses, and thereupon affixing said connecting elements to said bosses.

3,848,322

METHOD OF ATTACHING A FASTENER TO A SUPPORT WITH AN AIR OPERATED GUN

Donald E. Kuehn, Bay Village, and J. Keith Lyon, Lorain, both of Ohio, assignors to TRW, Inc., Cleveland, Ohio

Division of Ser. No. 154,936, June 21, 1971, Pat. No. 3,776,444. This application July 23, 1973, Ser. No. 381,411
Int. Cl. B23p *11/02*
U.S. Cl. 29—453 **8 Claims**



1. The method of attaching a fastener to a support with a tool having a housing forming an inner passage with a chuck at an end thereof and a fastener opening spaced rearwardly of the chuck, said method comprising positioning a plunger in a first position in said passage to the rear of said fastener opening, feeding a fastener through the opening and into said chuck, moving said plunger forwardly by applying a fluid force against a piston connected with said plunger and stopping said plunger in a second position with the forward end adjacent the fastener in the chuck by means of a stop extending into said passage, continuing an application of the fluid force on the piston, and retracting the stop from said passage to enable the piston to move the plunger forwardly to a third position substantially through said chuck to push the fastener out of the chuck and into engagement with the support.

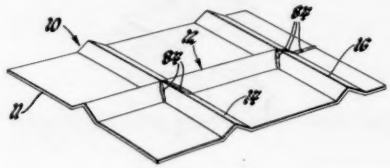
3,848,323

METHOD OF FORMING STIFFENER RIBS IN A SHEET METAL PANEL

Julius M. Perger, Cleveland, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 4, 1973, Ser. No. 394,151
Int. Cl. B23k *31/02*
U.S. Cl. 29—475 **4 Claims**

1. A method of forming intersecting stiffener ribs in a flat sheet of deformable metal having outer edges comprising the steps of placing a plurality of interconnected slit means in the interior of said sheet with each slit means including a pair of diverging side edges, forming an elongated depression in said sheet along a first axis intersecting one of said side edges at an angle relative thereto whereby said one of said side edges is displaced out of the plane of said sheet while maintaining the outer edges in the plane of the sheet so as to cause the other of said side edges to move in the direction towards the said one of said side edges, forming an elongated depression in said sheet along a second axis intersecting the other side edge at an angle relative thereto whereby said other side edge is displaced out of the plane of said sheet while maintaining the



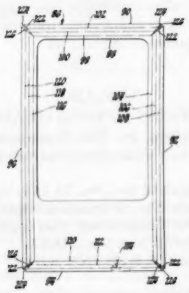
outer edges in the plane of the sheet so as to cause said one of said side edges to move in a direction towards said other side edge and meet the latter at substantially the same elevation relative to the plane of said flat sheet, and joining said side edges together so as to cause said depressions along said first and second axes to be interconnected and serve as stiffener ribs for said sheet.

3,848,324

METHOD OF FORMING A SHEET METAL DOOR

Julius M. Perger, Cleveland, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 4, 1973, Ser. No. 394,160
Int. Cl. B23k *31/02*
U.S. Cl. 29—475 **4 Claims**



1. A method of fabricating a closure member comprising the steps of, providing a flat sheet metal panel having a plurality of interconnected outer edges forming a plurality of corners, cutting slit means in each corner of said sheet metal panel so as to form a pair of spaced side edges lying on opposite sides of a line that intersects the corner, forming an elongated depression in said panel adjacent to and spaced from each outer edge and along an axis that intersects the side edges of a pair of slit means intermediate the ends thereof so as to cause the side edges of each slit means to move out of the plane of the panel towards each other and meet at a juncture while maintaining the outer edges in the plane of the panel, and permanently connecting the side edges of each slit means together so that each depression serves as a stiffener means for rigidifying said panel.

3,848,325

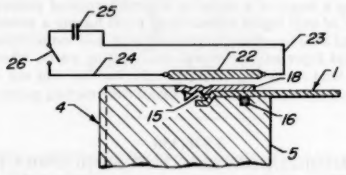
METHOD FOR ASSEMBLING BODY AND END SECTIONS FOR FLUID POWER CYLINDER

Charles W. Bimba, 101 Main St., Monee, Ill. 40449

Continuation-in-part of Ser. No. 249,346, May 1, 1972, Pat. No. 3,811,367. This application Aug. 30, 1973, Ser. No. 393,006

Int. Cl. B23p 17/00

U.S. Cl. 29—511 6 Claims



1. In a fluid power cylinder having a tubular body section, metallic end caps, an internal piston member and piston rod means extending through at least one of the end caps, the improved method of providing a non-loosening connection between an end cap and the tubular body section, which comprises the steps of:

a. providing an extended width peripheral portion for the end cap sized to fit into an end of the tubular body section,

b. forming a continuous peripheral shoulder around said end cap which is of larger diameter than said extended width portion adapted to engage said body section and which will form an abutting stop for the latter when they are assembled,

c. further forming a peripheral groove in said cap adjacent said shoulder, with said groove bottom being of lesser diameter than said extended width portion of the cap and said groove further having a sloping wall portion angled upwardly toward such extended width portion,

d. effecting a coupling between the end cap and said tubular body section to a point where the end of the latter abuts said shoulder of said cap and then permanently deforming the end of the tubular body section down into a said groove until such body section conforms to the bottom and sloping wall portion of said groove,

e. subsequently rolling and displacing a portion of the shoulder of said cap continuously down over the deformed end portion of the tubular body section in said groove, whereby there is an initial tight peripheral clamping of the end cap to the body section, and

f. effecting the pressing of an encircling metal band over the rolled portion of the shoulder and the deformed end portion of the tubular body section which is in said groove, whereby to effect a circumferential locking of cap and body sections together in a high pressure resisting engagement.

3,848,326

METHOD AND APPARATUS FOR FORMING A SUPPORT LUG OF A CATHODE STARTING SHEET ASSEMBLY

Jorma J. Lehtovaara, Merstham, England, assignor to Lonnstrom Oy, Rauma, Finland

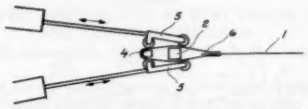
Filed Aug. 21, 1973, Ser. No. 389,654

Claims priority, application Sweden, Aug. 22, 1972, 10905/72

Int. Cl. H01r 43/04; B23p 19/02

U.S. Cl. 29—525 6 Claims

1. Method for forming a support lug of a cathode starting sheet assembly comprising a starting sheet, a support rod and at least one support lug extending around said support rod and secured to opposite sides of said starting sheet, comprising feeding a starting sheet blank and a support rod at a mutual distance being less than their mutual distance in the final starting sheet assembly to a support lug blank feeding station, inserting an auxiliary rod between said feeding station and said support rod at the side thereof being opposite to said starting



sheet blank, said auxiliary rod having a cross-sectional dimension being smaller than the corresponding dimension of said support rod, feeding at least one support lug blank against said auxiliary rod, bending said support lug blank around said suxiliary rod to form a support lug, and removing said auxiliary rod.

3,848,327

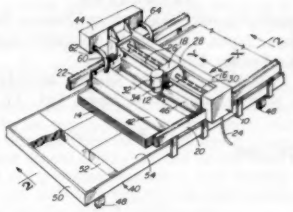
APPARATUS FOR WORKING ON SHEET MATERIAL

Heinz Joseph Gerber, and David Raymond Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

Continuation-in-part of Ser. No. 96,384, Dec. 9, 1970, Pat. No. 3,750,507. This application June 21, 1973, Ser. No. 372,429

Int. Cl. D06h 7/00

U.S. Cl. 29—559 10 Claims



1. Apparatus for holding sheet material comprising: a support table having a bed defining a supporting surface on which the sheet material can be spread; vacuum means for producing sub-atmospheric pressure in at least one region of the supporting surface; and pressurizing means cooperating with the vacuum means and positioned above the supporting surface of the table for producing a region of increased pressure above atmospheric pressure over sheet material on the supporting surface, the pressurizing means including a fluid compartment positioned over the region of sub-atmospheric pressure at the supporting surface and defining a chamber receiving pressurized fluid and having at least one opening confronting the supporting surface of the table and overlying said one region in which the subatmospheric pressure is produced whereby the sheet material between the region of sub-atmospheric pressure and the fluid compartment is forced tightly against the supporting surface.

3,848,328

CHARGE TRANSFER DEVICE

Tetsuo Ando, Ebina-machi, and Yoshimi Hirata, Hatano, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 5, 1972, Ser. No. 312,332

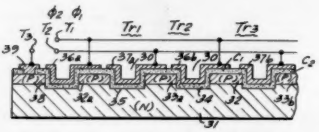
Claims priority, application Japan, Dec. 11, 1971, 46-100410

Int. Cl. H01l 11/00, 15/00

U.S. Cl. 29—578 2 Claims

1. The method of forming a charge transfer device which includes: taking an N-type silicon substrate; covering said

substrate with a silicon nitride layer; selectively etching away portions of said silicon nitride layer and said substrate to form a plurality of windows having bottoms below the silicon nitride layer, forming a first layer of thick silicon dioxide by thermal oxidation in said windows, removing the silicon nitride layer; selectively forming a P-type layer by diffusion technique to form a plurality of island areas unidirectionally arrayed, the



depth of the P-type layer being shallower than the bottom of the silicon dioxide layer; removing said first silicon dioxide layer; forming a second oxide layer covering the N-type surface of said substrate and the P-type island areas; and depositing a plurality of metal layers to form gate electrodes and each gate electrode covering a portion of the N-type substrate and overlying a substantial portion of an adjacent P-type layer.

3,848,329

METHOD FOR PRODUCING A SEMICONDUCTOR STRAIN SENSITIVE ELEMENT OF AN ELECTROMECHANICAL SEMICONDUCTOR TRANSDUCER

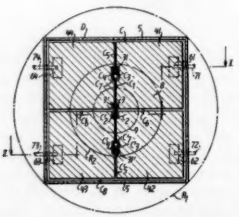
Isemi Igarashi; Hiroshi Nakamura, and Susumu Sugiyama, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Oct. 11, 1973, Ser. No. 405,534

Claims priority, application Japan, Oct. 11, 1972, 47-102238

Int. Cl. B01j *17/00*

U.S. Cl. 29—580 **28 Claims**



1. A method for producing a semiconductor strain sensitive element for electromechanical semiconductor transducers, said element having a base plate, at least two strain sensitive parts, lead mounting electrodes formed integrally on one face of said base plate, and a plurality of signal transmitting parts for transmitting electrical signals generated by said strain sensitive parts to said lead mounting electrodes, said method comprising the steps of:

forming a layer of a semiconductor crystal integrally with one face of said base plate having electrical insulating characteristics therebetween, said base plate comprising a semiconductor crystal;

forming at least two pairs of first narrow grooves in parallel to one another having a distance therebetween which is short when compared with the length thereof by removing said layer at first predetermined portions within a strain sensitive region, whereby at least two of said strain sensitive parts are formed;

forming a plurality of second narrow grooves comprising a perimeter groove formed at the perimeter part of said element and other grooves connected to said first narrow grooves and said perimeter groove to block a predetermined area by removing said layer at second predetermined portions, whereby a plurality of said signal transmitting parts are formed with a distance therebetween greater than the distance between said first grooves and which encompass an area therein greater than the area between said first grooves; and

forming a layer of a metal at a predetermined portion of each of said signal transmitting parts having a predetermined area to connect ohmically with said semiconductor crystal layer of said signal transmitting parts, whereby said lead mounting electrodes are formed and are connected ohmically with said signal transmitting parts.

3,848,330

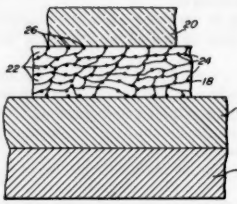
ELECTROMIGRATION RESISTANT SEMICONDUCTOR CONTACTS AND THE METHOD OF PRODUCING SAME

Edward L. Hall, and Elliott M. Philofsky, both of Phoenix, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 258,620, June 1, 1972, Pat. No. 3,743,894. This application Mar. 16, 1973, Ser. No. 341,838

Int. Cl. B01j *17/00*

U.S. Cl. 29—590 **6 Claims**



1. The method of producing a metallic contact for a semiconductor device comprising the steps of:

evaporating a layer of contact metal comprising aluminum and at least a 1 percent portion of copper onto said semiconductor device;

heating said device to a temperature sufficiently high to cause said copper to go into solution with said aluminum and

rapidly cooling said device at a rate of at least 50° C per second to precipitate copper rich precipitates out of solution to form a fine grain structure having aluminum grains and grains of copper rich precipitates interspersed between said aluminum grains along the grain boundaries and triple points thereof.

3,848,331

METHOD OF PRODUCING MOLDED STATORS FROM STEEL PARTICLES

Norman M. Pavlik, Pittsburgh, and James W. Cunningham, Vandergrift, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

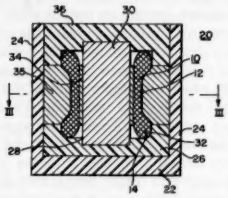
Filed Sept. 11, 1973, Ser. No. 396,256

Int. Cl. H02k *15/02*

U.S. Cl. 29—596 **15 Claims**

1. The method of producing a molded core having at least one conductor embedded therein employing microlaminations in which the microlaminations are formed from a ferromagnetic material, are substantially of an elongated rectangular cross-section, have been annealed to decarburize, deoxidize and improve the magnetic characteristics thereof, and in which each of the microlaminations is provided with an electrically insulative coating on the surface thereof, the steps

comprising, preforming a conductor into a desired configuration, assembling the preformed conductor in a flexible container of predetermined configuration, adding microlaminations about the conductor within the container, sealing the



container, compressing the microlaminates about the conductor to attain a packing factor in excess of 80%, removing the pressure and thereafter removing the molded core from the container.

3,848,332

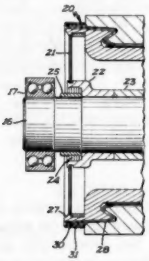
COMMUTATOR RING BANDING

Carl R. Bergquist, Jr., Hopkins, Minn., assignor to The Bergquist Co., Inc., Minneapolis, Minn.

Continuation of Ser. No. 208,310, Dec. 15, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 387,631

Int. Cl. H01n *43/00*

U.S. Cl. 29—597 **10 Claims**



1. The method of preparing an electrically insulating layer along the outer annular end surface of the commutator of an electrical motor to isolate the commutator from adjacent motor shaft support means in an electrical motor assembly which includes a central shaft, armature and commutator means including an annular commutator supporting sleeve, with said commutator means being mounted on said shaft, load bearing support means for said shaft adjacent the ends thereof, and annular spacer means disposed along said shaft for supporting said commutator supporting sleeve and sepa rating said commutator means from said load bearing support means, said method comprising:

a. applying a first generally rigid insulation layer to the outer edge surface portion of said annular commutator supporting sleeve to insulate the same therefrom;

b. applying a film of a curable electrical insulating adhesive composition to the outer surface of said first insulation layer to form an annular base bonding surface;

c. applying a generally flat endless band of heat shrinkable fluorinated ethylene-propylene over said adhesive film to cover said base bonding surface, said band normally having a diameter slightly greater than the diameter of said annular spacer means, but slightly less than the diameter of said annular spacer means upon undergoing thermal shrinkage; and

d. exposing said band to thermal energy adequate to cause thermal shrinkage therein until said band shrinks to a normal diameter significantly less than that of of said annular spacer means and becomes firmly bonded to said base bonding surface and the adhesive film fully cured.

3,848,333

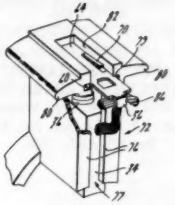
METHOD OF ASSEMBLY OF AN ELECTRICAL BRUSH AND TERMINAL MEMBER

Theodore G. Apostoleris, 3750 Miller Rd., Ann Arbor, Mich. 48103

Division of Ser. No. 362,628, May 21, 1973,. This application Dec. 17, 1973, Ser. No. 425,642

Int. Cl. H01r *9/00*

U.S. Cl. 29—630 E **6 Claims**



1. A method of assemblying a resiliently biased electrical brush within a brush housing comprising the steps of:

inserting in a first direction the brush and biasing means within the housing;

compressing the biasing means with an end of the terminal blade member to a degree sufficient compress all of the biasing means between the brush and an imaginary plane defined by the terminal blade member final position;

sliding the terminal blade member generally perpendicular to the first direction until the end of the blade member enters a slot provided therefor in said housing and the shoulders of said blade member are aligned with notches provided therefor in said housing; and

forcing said blade 4ember vnd]nd said shoulders into said slot and notches, respectively, until resilient fingers of said terminal blade member move freely behind wall means of said housing.

3,848,334

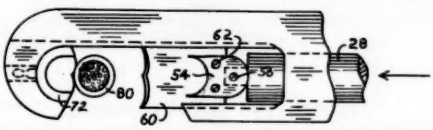
HYDRAULICALLY ACTUATED CABLE CUTTER AND INDENTOR

John A. Mattera, deceased, late of 32-50 72nd St., Jackson Heights, N.Y. 11370 (by Sadie Mattera, executrix)

Filed Mar. 24, 1972, Ser. No. 237,719

Int. Cl. B26b *17/00*

U.S. Cl. 30—180 **1 Claim**



1. Hydraulically actuated tool comprising a cylinder, means for admitting hydraulic fluid under pressure to one end of said cylinder, a tool head integral with the other end of said cylinder, a hollow piston in said cylinder, said piston having an inwardly directed flange at its one end adjacent said means for

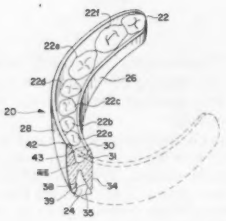
admitting hydraulic fluid, as axial rod in said hollow piston secured to said means for admitting hydraulic fluid, an outwardly directed flange on the free end of said rod, a spring on said rod, mounted between said inwardly directed flange and said outwardly directed flange, for biasing said piston against the action of hydraulic fluid, said tool head terminating in a hook having a curved internal surface, a tongue extending from said tool head, spaced from and opposite of said hook, said tool head, said hook and said tongue forming an opening for the passage of a cable, said hook having a bore disposed in the axis of the movement of said piston, an anvil being mounted in said hook and a tool component mounted in said opening on the other end of said piston, means for securing said anvil in said hook, said tool component a blade mounted on the other end of said piston said blade being formed with a pair of concave cutting edges, said anvil having a pair of convex faces complementary to said pair of cutting edges and substantially wider than said pair of cutting edges.

3,848,335

ORTHODONTIC APPLIANCE HAVING COOPERATION DETECTION CAPABILITY

Earl O. Bergersen, 950 Linden Ave., Winnetka, Ill. 60093

Filed Jan. 25, 1974, Ser. No. 436,701
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 B **15 Claims**



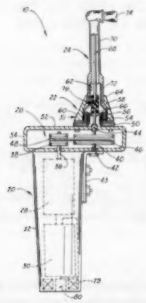
1. An orthodontic appliance for use in the positioning of teeth, said appliance formed of a material which is normally essentially transparent under normal room conditions and which increases in opacity by absorption of moisture when placed in a patients mouth for a predetermined period of time.

3,848,336

DENTAL INSTRUMENT

John W. Copeland, 161 S. Oliver, Wichita, Kans. 67218

Filed July 2, 1973, Ser. No. 375,625
Int. Cl. A61c *3/06*
U.S. Cl. 32—59 **16 Claims**



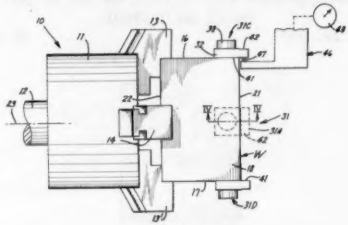
1. A portable dental instrument, comprising:
a. a hollow handle,
b. an electric motor mounted in said handle, said electric motor having a power output shaft,
c. means to power said electric motor mounted in said handle and connected to said motor,
d. speed changing means mounted on said handle and connected to said electric motor output shaft, said speed changing means, having an output shaft, and
e. rotary dental tool mounting means for removably mounting a rotary dental tool in operating position, mounted on said speed changing means, and connected to said rotary dental tool when mounted to change the operating speed of said tool relative the operating speed of said motor, said mount means has a resilient coupler member connectable between said output shaft and a drive shaft of said rotary dental tool and a sleeve member slidably engagable with said rotary dental tool and mounting said tool by friction pressure such that said tool is rotatable on said sleeve by finger pressure.

3,848,337

SURFACE INDICATOR

David M. Kraklau, St. Joseph, and John H. Taylor, Sodus Twp., Berrien County, both of Mich., assignors to Advance Products Corporation, Benton Harbor, Mich.

Division of Ser. No. 146,052, May 24, 1971, Pat. No. 3,718,977. This application Dec. 4, 1972, Ser. No. 311,507
Int. Cl. G01b *3/30*
U.S. Cl. 33—174 H **4 Claims**

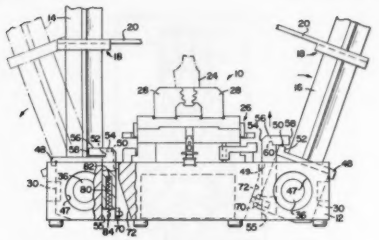


1. A portable and detachable gauging device adapted for attachment to a ferrous workpiece for accurately determining the distance between two substantially parallel surfaces on said workpiece, said device consisting of an article which is free of relatively moving parts, said article including a body having a smooth planar base surface, said body having a substantially cylindrical recess extending therethrough with the longitudinal axis of said recess being substantially perpendicular to said planar base surface, said recess extending from said base surface through said body to the side of said body opposite said base surface, said body being shaped substantially as a rectangular prism and having substantially perpendicular length and width dimensions which are both perpendicular to said axis, said body also having a thickness dimension extending in a direction substantially parallel to said axis, the width and length dimensions each being substantially greater than the thickness dimension, magnet means including a substantially cylindrical magnet snugly disposed within said recess and fixed relative to said body, said magnet being disposed so as to not project outwardly beyond said base surface, said magnet having on one end thereof a substantially smooth planar axial end surface which is disposed parallel and substantially flush with said base surface, and said magnet means including substantially cylindrical gripping means fixedly connected to and coaxially aligned with said magnet and projecting outwardly from the other end thereof, said gripping means projecting outwardly beyond said other side of said body, said cylindrical gripping means having a diameter which is substantially smaller than each of the length and width dimensions of said body, whereby said gripping means facilitates manual gripping and manipulation of said article.

3,848,338
UNIVERSAL GAGE WITH TILT-OUT UPRIGHTS

Martin A. Herman, 2085 W. 114th St., Cleveland, Ohio 44102

Filed Dec. 20, 1972, Ser. No. 317,072
Int. Cl. G01b 5/20
U.S. Cl. 33—174 PB 6 Claims



1. In a universal type gage including a base, a pair of uprights, means for positioning a test article between said uprights, and gage means carried by said uprights, the improvement of

a positioning means on the base for an upright and having one of said uprights secured thereto,

a shaft operatively secured to and extending from said positioning means,

means journalling said shaft on said base for pivotal movement of said one upright away from said base,

means for locking said positioning means in position on said base with said one upright vertically positioned, and

said locking means including a lock member slidable vertically in relation to said base, and a locking device provided on said positioning means, said lock member and locking device having operative engagement when said one upright is vertically positioned.

3,848,339
CYLOMETER

Ray Howard Strasbaugh, 3400 Airport Way, Long Beach, Calif. 90806

Filed Feb. 9, 1973, Ser. No. 331,214
Int. Cl. G01b 5/08, 5/20
U.S. Cl. 33—174 A 7 Claims

1. A cylometer comprising in combination:

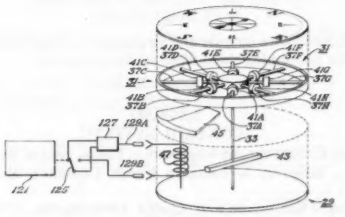
a support carrying a projecting pair of contact members laterally spaced apart by the length of a chord which they are adapted to span upon contacting the curved surface of a workpiece, said contact members being mutually parallel, selectively rotatable cylinders, each characterized by an annular work-contact perimeter disposed perpendicular to its cylindrical axis and adapted for changeable point contact with the curved work surface,

a longitudinally reciprocable plunger disposed parallel with said cylinders, transecting said support intermediate the contact members and having an end adapted to contact the workpiece in line with the midpoint of said chord, and indicator means responsive to movement of said plunge for indicating the perpendicular distance between said chord and the work-contacting end of the plunger, whereby the curvature of said workpiece can be determined.

3,848,340
DISTANCE AND DIRECTION RECORDING DEVICE AND METHOD

Alton B. Hamm, 3724 Scranton Dr., Fort Worth, Tex. 76118

Filed Sept. 25, 1972, Ser. No. 291,775
Int. Cl. G01c 22/00
U.S. Cl. 33—354 21 Claims



1. A device for recording distance and direction of travel as it is moved along a course of traverse relative to a given point comprising:

support means,

rotatable means coupled to said support means for rotation about an axis of rotation relative to said support means, a plurality of radially extending supports coupled to said rotatable means at different angular positions about the axis of rotation of said rotatable means for rotation therewith,

weight means coupled to each radial support for movement to positions between said axis of rotation and a given perimeter outward from said axis of rotation, and

means for moving selected ones of said weight means to positions between said axis of rotation and said given perimeter dependent upon the distance and direction of travel with said device,

said support means being adapted to be positioned to allow said axis of rotation to be located in a generally horizontal position to allow said rotatable means to rotate to a position of stable equilibrium dependent upon the resultant weight shift applied to said rotatable means by the movement of said weight means between said axis of rotation and said given perimeter.

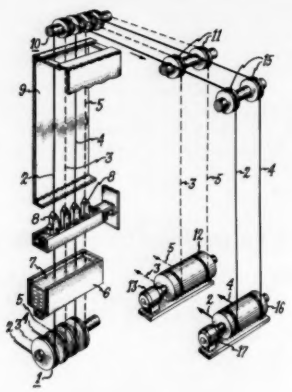
3,848,341
METHOD OF DRYING COATED WIRES

Bernd Linder, Hendersonville, N.C., assignor to General Electric Company

Filed May 22, 1972, Ser. No. 255,792
Int. Cl. F26b 3/22; B44d 1/42
U.S. Cl. 34—25 4 Claims

1. In a method of treating coated wires wherein a plurality of wire strands coated with heat hardenable coating material are passed closely adjacent one another in the same direction through a drying oven for heat hardening the coating material,

the improvement which comprises the step of imparting relative longitudinal motion between adjacent ones of said plural-



ity of coated wire strands during passage through said drying oven for preventing them from sticking together.

3,848,342

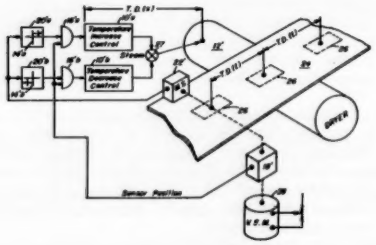
CONTROL SYSTEM

Edward C. Bartles, and Raymond A. Fraim, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 26,606, April 8, 1970, Pat. No. 3,706,339, which is a division of Ser. No. 778,395, Nov. 28, 1968, Pat. No. 3,518,775. This application July 24, 1972, Ser. No. 274,537

Int. Cl. F26b *21/06*

U.S. Cl. 34—48 **2 Claims**



1. Control apparatus comprising

a. heat exchange means having a regulatable temperature;

b. signal responsive valve means cooperative with said heat exchange means, and having therewith a certain time constant, said valve means being adapted to regulate such temperature;

c. sensing means for producing a signal variable as a function of the moisture of a web dried by said heat exchange means; and

d. cyclic gating means for cyclically applying the signal of said sensing means to said valve means, at intervals proportional to said time constant; said cyclic gating means including means for driving said sensing means back and forth across said web, and gate means for use in applying the output signal of said sensing means to said valve means only when said sensing means has a certain widthwise position with respect to said web.

3,848,343

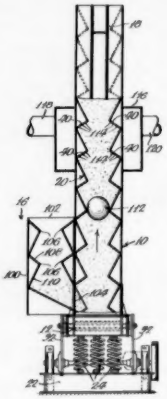
VERTICAL LIFT CONVEYOR

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Division of Ser. No. 118,633, Feb. 25, 1971, which is a continuation-in-part of Ser. No. 843,531, July 22, 1969, abandoned. This application Feb. 9, 1973, Ser. No. 331,331

Int. Cl. F26b *15/08;* **B02c** *19/00, 21/00*

U.S. Cl. 34—164 **5 Claims**



1. A lift conveyor of the vibratory type including a stationary base, a tubular non-horizontally elongated lift assembly having an inlet at its lower end and an outlet at its upper end, said lift assembly including a plurality of opposed, horizontally aligned, inwardly directed projections extending between said ends with each projection being defined by an upper surface and a lower surface with the upper surface having a longer length than the lower surface, vibrating means associated with said lift assembly for moving said lift assembly up and down in a non-horizontal direction, and operative to accelerate said lift assembly in a downward direction at a rate greater than the rate of acceleration of gravity; means associated with said inlet for precluding backflow of material during movement of said lift assembly in a downward direction; and a mulling device within said lift assembly, said mulling device comprising an object sufficiently large so as to be engaged by said projections to preclude downward movement of the object therepast and sufficiently small so as to be movable above the projections that it may engage whereby during vibration of said lift assembly, movement of said object therein provides mulling action on material passing through said lift assembly.

3,848,344

BUNKER-BOILER INSTALLATIONS

Roland Kemmetmueller, Pittsburgh, Pa., assignor to American Waagner-Biro Company, Inc., Pittsburgh, Pa.

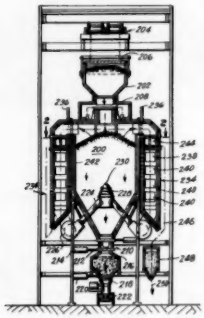
Continuation-in-part of Ser. No. 279,224, Aug. 9, 1972, Pat. No. 3,795,987. This application Oct. 23, 1973, Ser. No. 408,851

Int. Cl. F26b *17/12*

U.S. Cl. 34—168 **10 Claims**

1. In an apparatus for cooling a hot material in bulk, such as hot coke, upright bunker means having a top end for receiving the material such as hot coke and a lower discharge end through which the material is discharged after being cooled, fan means for creating a path of gas flow upwardly through the interior of the bunker means and downwardly along the exterior thereof for continuously circulating a cooling gas upwardly through the bulk material in the bunker means to extract heat therefrom while cooling the latter material so that the material is discharged from the bunker means in a cooled

condition, and a plurality of heat exchanger and/or boiler means situated at the exterior of said bunker means adjacent thereto and distributed thereabout, said plurality of heat exchanger and/or boiler means respectively having top ends communicating with the top end of said bunker means and bottom ends communicating with said fan means so that the latter draws the gas heated in the bunker means from the top

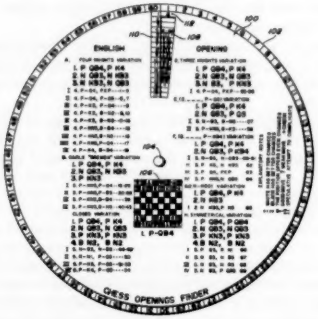


end of the latter downwardly through the plurality of heat exchanger and/or boiler means to be returned to said bunker means after being cooled in said heat exchanger and/or boiler means, so that any one of said heat exchanger and/or boiler means may be placed out of operation for purposes such as inspection or repair while the cooling of the material in bulk within the bunker means continues with the remaining heat exchanger and/or boiler means.

3,848,345
CHESS WHEEL

Vrej Ter-Gevorkian, deceased, late of 4313 Green Pond Rd., Bethlehem, Pa. 18017 (Aram Sarhadian, administrator)

Filed May 29, 1973, Ser. No. 364,879
Int. Cl. G09b *19/22*
U.S. Cl. 35—8 R **10 Claims**



1. An instructional device for teaching opening moves in the game of chess comprising:

a first member having a sector-shaped and sector-placed slot and bearing indicia representing a plurality of variations of a particular opening move sequence, each variation comprising a plurality of moves leading to a particular position of the chess pieces, and each variation including a plurality of subvariations for the move following that move leading to said particular position, each subvariation comprising the first move of a plurality of alternatives each comprising a sequence of moves that are to follow said first move, and each subvariation having associated therwith a plurality of sector numbers, each sector number being associated with a particular one of said alternatives;

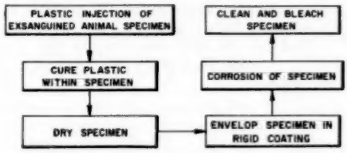
a second member larger than said first member and bearing indicia dividing the surface of said second member into a plurality of sectors, said sectors being consecutively numbered and corresponding in dimension to the size of said slot in said first member, each of said sectors containing a sequence of moves corresponding to a specific one of the alternatives associated with a particular one of said subvariations of said particular opening move sequences contained on said first member; and

means for rotatably fastening the center of said first member to the center of said second member.

3,848,346
PROCESS OF PREPARING SKELETAL-VASCULAR CASTS

Walter J. Mackey, 1991 Sharondale Ave., St. Paul, Minn. 55113

Filed Sept. 6, 1973, Ser. No. 394,758
Int. Cl. G09b *23/30*
U.S. Cl. 35—20 **10 Claims**


PLASTIC INJECTION OF EXSANGUINED ANIMAL SPECIMEN
CURE PLASTIC WITHIN SPECIMEN
DRY SPECIMEN
ENVELOP SPECIMEN IN RIGID COATING
CORROSION OF SPECIMEN
CLEAN AND BLEACH SPECIMEN

1. The method of preparing skeletal-vascular casts of the articulated skeleton and vasculature structure of an animal comprising the steps of:

a. exsanguinating the animal;

b. injecting a curable synthetic resinous fluid into the blood vessels of said exsanguinated animal;

c. curing said curable synthetic resinous fluid into a generally rigid mass;

d. removing the outer skin from the flesh of said animal;

e. wrapping said skinned animal in a generally rigid perforated wrapping disposed about the outer surface of said animal;

f. placing said wrapped animal into contact with a colony of flesh-eating insects and maintaining said contact until the flesh is substantially entirely removed, whereupon the specimen is removed from contact with said insects; and

g. thereafter cleaning, bleaching, and removing said perforated wrapping from said animal.

3,848,347
SKI BOOT WITH ADJUSTABLE FLEXURE MEANS

Alden B. Hanson, and Chris A. Hanson, both of Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.

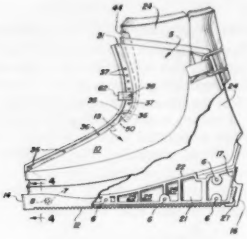
Filed Mar. 5, 1973, Ser. No. 338,291
Int. Cl. A43b *11/00*
U.S. Cl. 36—2.5 AL **16 Claims**

1. A ski boot with means for adjusting the flex in the boot so that the flex in the boot can be changed by the wearer of the boot, said boot comprising:

a shell having a closure system adapted for closing said shell about the foot of a skier;

said shell having a split portion commencing at the top of said boot and extending toward the bottom of said boot, said split portion being defined in part by a pair of generally parallel opposed edges;

clamping means for interconnecting the edges of said split portion at a desired point along the length of said split portion;



whereby, upon exertion of pressure on said boot, the shell is adapted to separate along the length of said split portion from the top of the boot to the location where said clamping means connects the edges of said split portion.

3,848,348

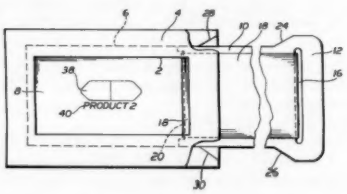
DISPLAY DEVICE

Margaret Grant Hawley, Philadelphia, Pa., assignor to Smith Kline Corporation, Philadelphia, Pa.

Filed July 23, 1973, Ser. No. 381,992

Int. Cl. G09f *11/00*

U.S. Cl. 40—64 R **1 Claim**



1. A display device comprising:

a planar frame having opposed upper and lower edges, opposed side edges and a window opening,

an endless flexible band having substantially parallel edges, said flexible band being secured to the frame between the window opening and one side edge of the frame on a line substantially normal to the edges of the band, lying behind and overlapping the window opening, and having a display opposite the window opening for viewing through the window opening,

a planar slide means having a pair of opposed edges substantially normal to the edges of the band, said band substantially encompassing the slide means between the opposed edges thereof,

a handle integral with the slide means extending beyond said one side edge of the frame for manually moving the slide means in the direction away from the other side edge of the frame to rotate the band about the slide means and move the band away from the window opening and for subsequently returning the slide means to its original position,

a planar panel behind the slide means and connected to the frame, said panel presenting a display underlying the window opening and visible when the band is moved away from the window opening,

whereby reciprocal movement of the handle and the associated slide means results in the presentation of the displays alternatively.

3,848,349

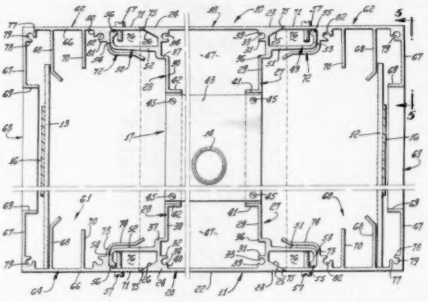
ILLUMINATED OUTDOOR SIGN

Roy Olsen, San Gabriel, Calif., assignor to Superior Outdoor Display Inc., Long Beach, Calif.

Filed Feb. 9, 1973, Ser. No. 330,997

Int. Cl. G09f *13/04*

U.S. Cl. 40—132 R **10 Claims**



1. In a sign having a cabinet which frames at least one display panel, illumination means within the cabinet for illuminating the panel, and electrical means for supplying power to said illumination means, said cabinet including a central frame member and at least a front frame member, the improvement wherein said central frame member comprises:

four identical elongate frame sections mitered at a 45° angle at the ends thereof and joined at right angles, each of said frame sections including:

an elongate outer plate having at least one side edge; and

a first elongate L-shaped flange supported with one of the legs thereof parallel to and spaced inwardly from said outer plate and projecting beyond said one side edge thereof, the other leg of said first flange extending toward but being spaced from the plane of said outer plate and terminating in an enlarged lip; and wherein said front frame member comprises:

four identical elongate frame sections mitered at a 45° angle at the ends thereof and joinable at right angles, each of said frame sections including:

an elongate side wall positionable coplanar with said outer plate of said central frame member and having a side edge adapted to engage said one side edge of said central frame member;

a second elongate L-shaped flange, one edge of said second flange being connected to said side wall, said side wall and said second flange defining a U-shaped channel for receipt of said first flange, the legs of said first flange being positionable parallel and adjacent to respective legs of said second flange; and

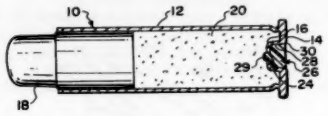
means extending through said side wall, between said side edge thereof and said one edge of said second flange, for preventing removal of said first flange from said U-shaped channel but permitting selective pivotal movement of said frame sections of said front frame member relative to said central frame member, rotation of said first flange within said U-shaped channel of the frame section forming the top of said front frame member being permitted in a first direction until said side edge of said side wall contacts said one leg of said first flange, said one side edge of said outer plate of said frame sections of said central frame member overlapping said side edge of said side wall of said frame sections of said front frame member thereby permitting pivotal movement of said top of said front frame member in said first direction only relative to the top of said central frame member.

3,848,350

DRY FIRE CARTRIDGE OR SHOT SHELL

Herman J. Seminiano, 3720 W. 61st St., Chicago, Ill. 60629

Filed Aug. 10, 1973, Ser. No. 387,285
Int. Cl. F41c *27/00*
U.S. Cl. 42—1 N 6 Claims



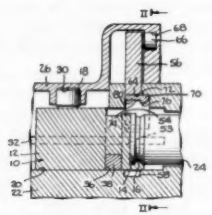
1. A dummy cartridge suitable for dry-firing practice comprising:
   a cartridge case having a base end with a center fire primer pocket therein;
   said primer pocket including a flash hole defined by said base end and a shock-absorbing plastic body molded within said primer pocket, characterized by its toughness and ability to recover after penetration by a firing pin;
   an integral portion of said plastic body extending within said flash hole in interfacial locking relationship.

3,848,351

GUN BOLT

Burton Parker Clark, Saint George, Vt., assignor to General Electric Company, Burlington, Vt.

Filed July 23, 1973, Ser. No. 381,952
Int. Cl. F41c *15/00*; F41d *7/02*
U.S. Cl. 42—25 6 Claims



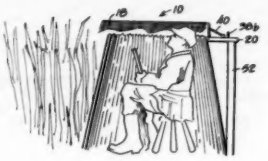
1. A bolt assembly, for a firearm, for firing a round of ammunition having a peripheral extractor groove, said assembly comprising:
   a receiver having a chamber having an interior wall;
   a bolt longitudinally slidable in said receiver and having an extractor lug for disposition within an initial, angularly defined, portion of the extractor groove of the round;
   a filler segment for disposition within the remainder, angularly defined, portion of the extractor groove of the round; and
   transport means for initially disposing said filler segment within the remainder portion of the extractor groove and for subsequently disposing both said filler segment and said extractor lug within said chamber in transverse adjustment with said interior wall, whereby the extractor groove is substantially filled and supported over its full 360° of angular extent.

3,848,352

COVER FOR A HUNTER'S BLIND

Chester M. Sayles, 967 Montgomery Ave., San Bruno, Calif. 94066

Filed Nov. 7, 1973, Ser. No. 413,570
Int. Cl. 220 *35*; A01m *31/00*
U.S. Cl. 43—1 13 Claims



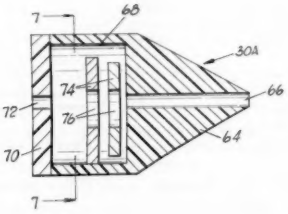
1. A cover for a hunter's blind of the kind used to camouflage the presence of a hunter, said cover comprising,
   screen means for covering a top opening in the blind, said screen means including a peripheral frame and netting on the frame, said netting being sufficiently open to permit a hunter beneath the netting to watch flying wild fowl through the netting,
   mounting means including a base member for mounting the screen means adjacent one edge of the top opening in the blind, and
   hinge means for connecting the screen means to the base member for opening movement and having a generally horizontally extending axis whereby the screen means swings vertically about the hinge means between a generally horizontally extending closed cover position over the blind and a generally vertically extending open position.

3,848,353

RATTLE SOUNDER FOR FISHING LURES

Bingham A. McClellan, Traverse City, Mich., assignor to McClellan Industries, Inc., Traverse City, Mich.

Filed July 5, 1973, Ser. No. 376,813
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.31 2 Claims

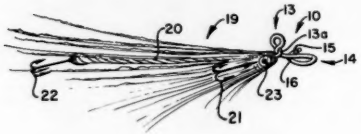


1. A rattle lure attachment for fishing lures comprising
   a hollow body having a cylindrical interior cavity closed at each end, and defining aligned central holes at each end coaxial with said cavity,
   and a plurality of flat metal slugs of polygonal outlines positioned loosely in said cavity to strike against the surface thereof when the body is moved,
   said slugs having central bores larger than the holes in said body and being sized to surround the axis of said cavity when the peripheries of the slugs engage the periphery of the cavity.

3,848,354
QUICK TIE DEVICE

Grover R. Austad and Ronald G. Austad, both of 801 7th Ave., North, Great Falls, Mont. 59401

Filed Dec. 18, 1972, Ser. No. 315,934
Int. Cl. A01k *85/08, 91/04*
U.S. Cl. 43—42.49 1 Claim

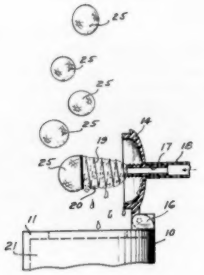


1. A quick tie eye comprising
an elongate body forming a fishing device to which a line is to be connected;
a post connected to the body intermediate its length and projecting substantially normal to the elongate axis of the body; and
an open eyelet formed at one end of said body and spaced from said post, said open eyelet being formed as an angled loop having an opening and having a shank end at least partially wrapped around the body and projecting therefrom to stand outwardly of the body with the free end of the shank being tipped in a direction away from the post and terminating over the open eyelet.

3,848,355
BUBBLE SOLUTION HOUSING WITH COVER-MOUNTED TUBE AND COIL SPRING

Donald E. Weight, 234 E. 25th St., New York, N.Y. 10010

Filed Apr. 25, 1974, Ser. No. 464,179
Int. Cl. A63h *33/28*
U.S. Cl. 46—7 1 Claim

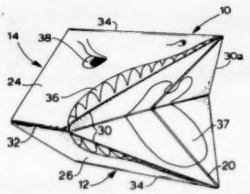


1. A toy for forming of soap bubbles comprising a cylindrical hollow housing, means hinging said housing to a cover, a flexible tube externally fastened to said cover and communicating with the hollow housing interior through an opening in the cover, and means securing a coil spring inside the cover about said opening in a position such that a liquid soap solution may be located in the housing interior to wet the coil spring when the cover is closed, with the rotation of the cover about its hinging means to an open position permitting the user to blow through the tube and form bubbles from the soap solution retained on the coil spring.

3,848,356
ENVELOPE HAVING MEANS FOR READILY FORMING A HAND PUPPET THEREFROM

Glenn John Wylie, 14 W. Dean Park Dr., Islington, Ontario, and Irving Morton Koltz, 28 Livingston Rd., Scarborough, Ontario, both of Canada

Filed Jan. 7, 1974, Ser. No. 431,089
Int. Cl. B65d *27/00*
U.S. Cl. 46—11 8 Claims

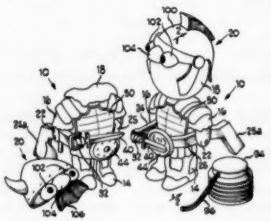


1. A novelty article of paper card stock in the form of a puppet which comprises;
an envelope of paper card stock having two sides which are fastened along three edges to form a rectangular envelope having one open edge and three closed edges defining two closed corners, said envelope having preformed means by which it may be readily altered in shape to form a hand puppet, said means comprising a plurality of fold lines dividing said envelope into adjacent portions relatively swingable thereabout, said fold lines including:
edge fold lines formed along said three closed edges;
diagonal fold lines formed from the closed corners of the envelope across each said side in a triangular manner, and,
a further fold line along the central axis of each said side, intersecting the junction of the two diagonal fold lines whereby, the envelope may be manufactured and shipped flat, and may be set up to form a puppet simply by opening out the sides at said open edge into a generally rectangular opening, and then indenting the envelope inwardly along the closed edge between the two closed corners whereby to form the two closed corners of the envelope into upper and lower relatively movable lobes separated by said further fold line.

3,848,357
DUELING FIGURE TOYS

Howard J. Morrison, Deerfield, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 12, 1973, Ser. No. 406,040
Int. Cl. A63h *13/06*
U.S. Cl. 46—142 18 Claims



1. A dueling type amusement device including, in combination, at least a pair of figure toys, each figure toy comprising:
a torso having a portion thereof defining a target area;
a physically collapsible head mounted on said torso;
at least a first arm mounted on said torso including a selec-

tively actuatable striking element for striking the target area of an opposing figure; and

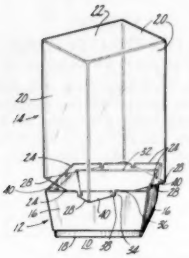
means operatively associated between said target area and said head for collapsing said head in response to a striking blow being delivered to the target area of that figure toy by the striking element of another figure toy.

3,848,358

PLANT TERRARIUM

James I. Messmer, Southfield, Mich., assignor to Florists' Transworld Delivery Association, Detroit, Mich.

Filed Mar. 27, 1973, Ser. No. 345,276
Int. Cl. A01g *9/02*; **B65d** *25/00*
U.S. Cl. 47—34 **7 Claims**



1. A terrarium for storing and growing a plant, said terrarium comprising: a container for the plant having side walls provided with a top edge defining a top opening to the interior of said container; a cover for said container, said cover having side walls provided with a bottom edge defining a bottom opening to the interior of said cover; said container top opening having a cross-sectional shape defined by said top edge; said cover bottom opening having a cross-sectional shape defined by said bottom edge; first support means to stably support said cover over said container in a first position such that said container top opening and said cover bottom opening are substantially contiguous and concentric and said cross-sectional shapes are in matching relationship to form an enclosure; and second support means to stably support said cover over said container in a second position such that the container top opening and the cover bottom opening are in mismatching relationship to provide an opening to the interior of said terrarium between said bottom edge and said top edge, wherein said first support means is a ledge projecting from said container side walls proximate said top edge for receiving thereon said bottom edge of said cover to stably support said cover over said container, said second support means is a plurality of slots defined in said container side walls, each of said slots having one end open to said top edge of said container side walls to receive therein said bottom edge of said cover to stably support said cover over said container and each of said slots having an end opposite said open end terminating between said top edge of said container side walls and said ledge.

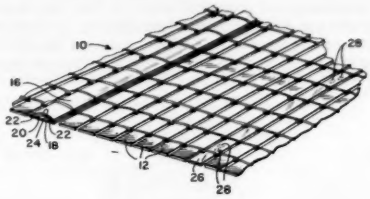
3,848,359

DEVICES, SYSTEMS AND METHODS EMPLOYING KNITTING FABRIC MULCH

Robert T. Seith, Tuscaloosa, Ala., and Otto M. Bundy, Bradenton, Fla., assignors to Gulf States Paper Corporation, Tuscaloosa, Okla.

Filed Feb. 20, 1973, Ser. No. 333,782
Int. Cl. A01g *25/02*; **A01c** *1/04*
U.S. Cl. 47—56 **13 Claims**

1. A mulch comprising an open-mesh knitted fabric constituted by a multiplicity of knittedly interconnected longitudinal and transverse yarn elements, said fabric having at least one seed tape and a multiplicity of parallel strips between longitudinal yarn elements and interleaved with transverse yarn elements of said fabric, said strips being substantially wider than said yarn elements and occupying a major portion of the area of the fabric.

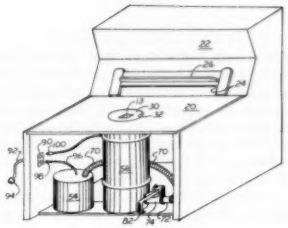


3,848,360

MEANS FOR AND METHOD OF POTTING PLANTS

Charles J. Million, 2426 Millegar Ln., Vista, Calif. 92083

Filed Mar. 2, 1973, Ser. No. 337,676
Int. Cl. A01g *9/08*
U.S. Cl. 47—58 **14 Claims**



1. The method of potting a plant in a growing medium in a pot having an opening in its bottom, comprising:

a. providing a work surface with a recess therein,

b. placing said pot in said recess and applying a vacuum to said recess to retain said pot in said recess and to said pot through said opening,

c. positioning said plant in said pot and drawing its roots downwardly by said vacuum,

d. bringing said growing medium across said work surface to said pot, packing said growing medium about said roots of said plant by said vacuum, and filling said pot with said medium, and

e. discontinuing said vacuum when said pot is filled and ejecting said pot upwardly out of said recess.

3,848,361

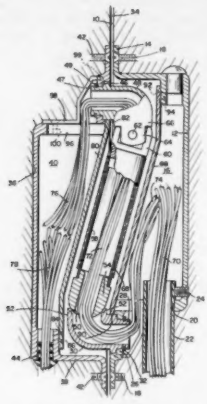
CONDUCTOR TRANSFER ASSEMBLY

John R. Foster; George Z. Zawadzki, and Maksimiljan Godec, all of Indianapolis, Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.

Filed Sept. 14, 1973, Ser. No. 397,397
Int. Cl. B60j *1/08*, *13/00*
U.S. Cl. 49—167 **21 Claims**

1. The combination with a passage having a frame and a hinged closure, of a wire transfer assembly comprising a first

chambered plate recessed into an element of said frame and elongated in a direction parallel with the hinge axis of said closure, a second chambered plate recessed into an edge of said closure adjacent said frame element and registering with said first chambered plate, a first tubular elbow having one end penetrating and journalled about its own axis in one of said plates and having its other end disposed at times in the chamber of the other of said plates, a second tubular elbow having one end penetrating and journalled about its own axis in the other of said plates, said last-named axis being offset



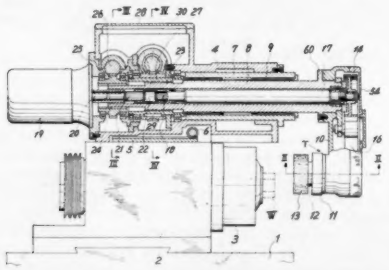
from but parallel with the axis of said one end of said first elbow and having its other end disposed at times in the chamber of said one plate, a first tubular head mounted to rock about a transaxial axis relative to said other end of said first elbow, a first tube coaxially supported from said first head, a second tubular head mounted to rock about a transaxial axis relative to said other end of said second elbow, and a second tube coaxially supported from said second head, said tubes being telescopically associated with each other for relative coaxial rotation and longitudinal extension and contraction.

3,848,362

GRINDING APPARATUS FOR SIDE SURFACE OF A WORKPIECE

Makoto Kikuchi, Kariya; Hiroaki Asano, Chiryu; Ikuo Otsu, Toyota, and Toyoaki Saeki, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan

Filed Nov. 3, 1972, Ser. No. 303,602
Claims priority, application Japan, Nov. 4, 1971, 46-87775
Int. Cl. B24b *5/06*
U.S. Cl. 51—2 K **7 Claims**



1. A grinding apparatus for the side surface of a workpiece comprising:

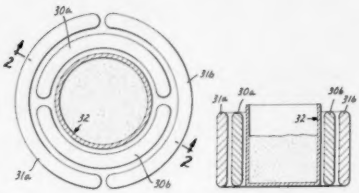
a bed;
a head stock mounted upon said bed for holding a workpiece thereon;
a main body mounted upon said head stock;
a spindle rotatably and slidably carried within said main body;
a swing arm attached to said spindle at one end thereof;
a grinding wheel rotatably mounted on the other end of said swing arm;
drive means for driving said grinding wheel; and
first feeding means mounted on said main body and operatively connected with said spindle for simultaneously imparting a rotational and axial movement to said swing arm so as to feed the grinding wheel toward the workpiece via a spiral feed pathway.

3,848,363

APPARATUS FOR TREATING OBJECTS WITH PARTICLES MOVED BY MAGNETIC FORCE

William R. Lovness, West Saint Paul, and James F. Feldhaus, Oak Park Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 20, 1973, Ser. No. 334,000
Int. Cl. B24b *31/00, 1/00*
U.S. Cl. 51—7 **5 Claims**



1. An apparatus for treating objects with particles moved by magnetic force comprising in combination:

a. means for generating a rotating magnetic field,
b. magnetic particles which are capable of being rotated by the magnetic field, and
c. means confining the rotating magnetic particles to a predetermined area within the effective influence of said magnetic field, wherein said means for generating a rotating magnetic field comprises at least four overlapping coils that are arranged in a generally circular pattern of opposed pairs and that are energized with two or more out of phase sources of alternating current so that opposed coils are of opposite magnetic polarity and of the same phase, and generation of said rotating magnetic field causes rotation of the magnetic particles on their axes and also causes their rotation in an orbital path about the axis of rotation of the rotating field and objects placed in their path are subjected to aggressive surface treatment.

3,848,364

SUPPORT STRUCTURE FOR SHELVING

Peter Costruba, Pico Rivera, Calif., assignor to Angeles Metal Trim Co., Los Angeles, Calif.

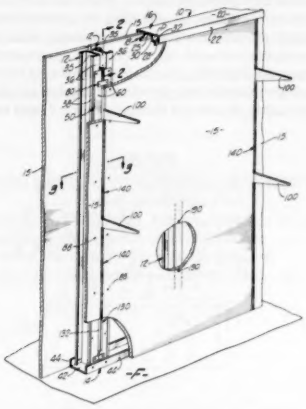
Division of Ser. No. 00,048, Jan. 2, 1970, Pat. No. 3,714,748.
This application Sept. 25, 1972, Ser. No. 292,093
Int. Cl. A47g *29/02*
U.S. Cl. 52—36 **11 Claims**

1. A building structure, comprising:

a pair of elongated upstanding channeled stud members having main webs spaced apart and disposed in opposed substantially parallel relationship;

an elongated upstanding interlock member having therein a shallow elongated vertical channel extending longitudinally of said interlock member adapted to adjustably receive a support bar therein, said interlock member having an inward elongated vertical passage behind said vertical channel;

said passage having a U-shaped closed end extending longi-



tudinally of said interlock member, said closed end forming one extremity of said interlock member;

means for securing said interlock member and said studs together as an interlocked rigid structure;

an elongated support bar positioned in said vertical channel having a slot communicating with said inward vertical passage; and

anchoring means adapted to anchor said support bar in said vertical channel.

3,848,365

LAPPING OR HONING MACHINE

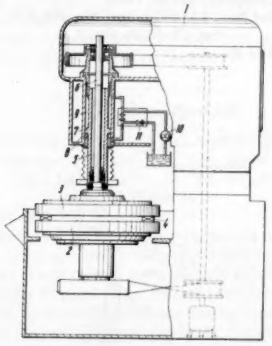
Hans-Friedrich Bovensiepen, Metzkausen, and Willi A. Caspers, Mettmann, both of Germany, assignors to Peter Walters, Mettmann, Germany

Filed Jan. 16, 1973, Ser. No. 324,048

Claims priority, application Germany, Feb. 1, 1972, 2204581

Int. Cl. B24b *7/00, 49/08, 1/00*

U.S. Cl. 51—111 R **13 Claims**



1. In a lapping or honing machine equipped with a pressure unit on a driven lap or hone to apply lapping or honing pressure to a workpiece and a control unit by which power input to the pressure unit is adjustable, the improvement which comprises means to steplessly increase the pressure of said driven lap or hone on the workpiece from a predetermined value toward a maximum value.

3,848,366

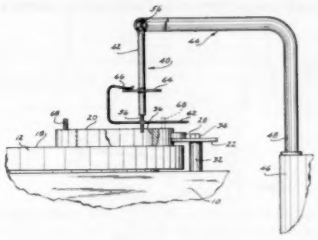
MEANS TO ASSURE UNIFORM FLOW OF AN ABRASIVE SOLUTION

John David, 1017 Indiana St., Racine, Wis. 53405

Filed Jan. 16, 1973, Ser. No. 324,179

Int. Cl. B24b *37/04, 57/00*

U.S. Cl. 51—129 **3 Claims**



1. In a lapping machine having a lap plate rotatable about a first axis, and a work-confining ring member having an opening, and in contact with, and freely rotatable on said plate about a second axis radially positioned relative to said first axis, in combination, a means to apply an abrasive solution to the surface of said plate, comprising an upright tubular dispensing member having an axial bore and terminating upwardly in a solution-supply member, said bore having fluid connection with said supply member, a rod freely rotatable in said bore and being of a diameter substantially less than the diameter of said bore and extending below said dispensing member, a plurality of radially-extending circumferentially-spaced arms integral with said rod and lying in a plane below said dispensing member, normal thereto and above said ring, a means to index rotation of said rod comprising an upright index member integral with said ring, and successively engageable with each of said arms to rotate said rod upon rotation of said ring.

3,848,367

ANCHOR DEVICE FOR TRAILERS

Ray A. Barnes, 1057 Patricia, Cape Girardeau, Mo. 63701

Continuation-in-part of Ser. No. 83,309, Oct. 23, 1970, Pat. No. 3,691,703. This application May 3, 1972, Ser. No. 249,828

Int. Cl. E04h *12/20*

U.S. Cl. 52—157 **1 Claim**

1. An anchoring system for receiving and holding the ends of a belt to secure a trailer at a selected location and to protect it against damage, comprising:

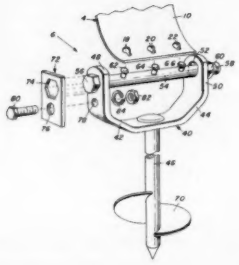
a belt consisting of an elongated web formed from a plurality of steel bands embedded in space side-by-side relationship in a wide, flat plastic covering, said plastic covering protecting said bands and providing a slip-resistant surface, said belt being adapted to pass over said trailer;

first and second connecting means on respective first and second ends of said belt, said first connecting means comprising a plurality of apertures at said first end of said belt and including one aperture adjacent the end of and passing through a corresponding one of each of said steel bands;

first and second ground anchor means for location on opposite sides of said trailer;

fastening means on each said anchor to cooperate with a corresponding one of said first and second connecting means to secure the first end of said belt to said first anchor means and the second end of said belt to said second anchor means, whereby said belt may be secured to one anchor means, pass over said trailer and be secured to the other anchor means, at least one of said ground anchor means including a generally Y-shaped yoke having first and second upstanding, spaced arms secured to a depending leg, said fastening means on said at least one anchor means including a bar member spanning said yoke, the ends of said bar passing through and being rotatable in first and second apertures located in said first and second arm;

pin means on said bar member for engaging said plurality of apertures on said first end of said belt to connect the end



of said belt to said bar member;

means including a shaped head on said bar member for rotating said bar to wind said belt around said bar and to place said belt in tension;

locking means for said bar comprising a locking plate having a first opening shaped to receive snugly and without rotation said shaped head and a second opening spaced from said first opening, a locking aperture in said first arm of said yoke positioned for alignment with said second opening in said locking plate when said locking plate is placed over said shaped head, and locking pin means adapted to pass through said second opening and said locking aperture when aligned to secure said locking plate and said bar member against rotation with respect to said yoke and to maintain the tension in said belt; and means secured to said depending leg of said yoke and serving to facilitate securing of said yoke in the ground and to prevent withdrawal thereof by forces directed axially along said leg.

3,848,368

APPARATUS FOR PNEUMATIC TIRE UNIFORMITY CORRECTION

Tokuma Toshioka, No. 4-5-65 Higashi-Kaigankita, Chigasaki-shi, Kanagawa-ken; Haruyuki Takagi, No. 3-4-40 Higashi-Kaigan, Tsujido, Fujisawa-shi, Kanagawa-ken, and Masayuki Shirai, No. 4-50 Tatsukamigaoka, Hiratsuka-shi, Kanagawa-ken, all of Japan

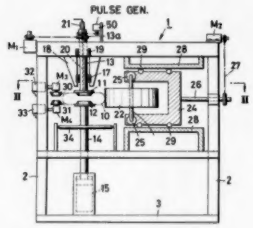
Filed July 5, 1972, Ser. No. 269,245

Claims priority, application Japan, July 6, 1971, 46-49256

Int. Cl. B24b *49/16*

U.S. Cl. 51—165 R **6 Claims**

1. Apparatus for improving the radial force uniformity of a pneumatic tire comprising, a plurality of memory means each representative of an individual, respective area on the circumference of a pneumatic tire whose radial force uniformity is to be improved, the areas represented by individual memory means being different areas and corresponding jointly to the peripheral area on the treads of the tire, means to sense said tire during rotation thereof in a loaded condition to develop automatically signals representative of radial force variations over a given level, means applying said signals representative of radial force variations over a given level to said memory means for storage therein, abrading means rendered effective automatically under control of said memory means to abrade on the periphery of said tire at periods corresponding to the periods and areas on the circumference of said tire developing the radial force variations above said level present themselves to said abrading means for abrading thereof, and means coop-



erative with said memory means rendering said abrading means effective only after the termination of the development of the corresponding signals representative of the radial force variations of the tire, said means cooperative with said memory means rendering said abrading means effective including a plurality of logic gates, each of said logic gates corresponding to one of the individual, respective areas on the circumference of the tire, means applying said signals representative of radial force variations stored in said memory means to said logic gates, means for sequentially applying input signals to said logic gates to enable ones of said logic gates receptive of said stored signals representative of radial force variations to develop output signals, and means receptive to said logic gate output signals for rendering said abrading means effective in response thereto.

3,848,369

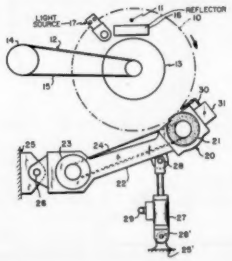
APPARATUS FOR BALANCE CORRECTING PNEUMATIC TIRES USING REFLECTIVE UNBALANCE CONTROL

Freydoun Monajjem, Stow, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Nov. 13, 1972, Ser. No. 306,075

Int. Cl. B24b *49/12*

U.S. Cl. 51—165 R **6 Claims**



1. Apparatus for balance correcting pneumatic tires comprising:

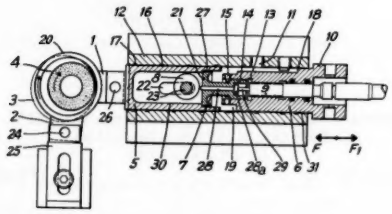
A. a rotation means for rotating an inflated pneumatic tire;
B. grinding means disposed adjacent said rotation means for removing selected amounts of rubber from selected portions of the tire at a predetermined rate;
C. a light source disposed adjacent said rotation means and adapted to illuminate reflective, imbalance indicating means on said tire during rotation thereof;
D. a light sensing means disposed adjacent said rotation means and adapted to sense light from the light source reflected by the reflective means on said tire and output an electrical signal in response to reflected light sensed; and
E. an actuating means for actuating the grinding means in response to the electrical output from the light sensing means.

3,848,370

WORK FEED DEVICES FOR CENTRELESS GRINDING MACHINES

Georges Garcin, Cran-Gevrier, France, assignor to Ste Nouvelle de Roulements (S.N.R.), Annecy, France

Filed Nov. 10, 1972, Ser. No. 305,347
Claims priority, application France, Dec. 27, 1971, 71.46832
Int. Cl. B24b *5/18, 41/06*
U.S. Cl. 51—237 **7 Claims**



1. In a centreless grinding machine
means defining a support face for a workpiece,
a shoe for supporting the workpiece radially, and
a workpiece feed device, said feed device comprising
cylinder means,
a first piston mounted in the cylinder means and carrying the shoe
a second, control piston mounted in the cylinder means,
resilient means connecting the second piston to the first piston and applying an adjustable force between the pistons, and
a telescopic retaining element, said element limiting the maximum spacing between the pistons.

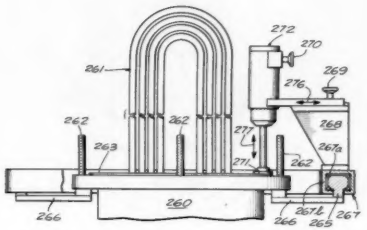
3,848,371

METHOD OF RECONDITIONING A HEAT EXCHANGER

Lester L. Dillinger, 218 Fourth St., Seal Beach, Calif. 90740

Filed July 26, 1973, Ser. No. 382,770
Int. Cl. B24b *19/26*
U.S. Cl. 51—241 S **6 Claims**

1. The method of reconditioning a generally circular header for a heat exchanger, which has a return tube bundle protruding from the center thereof and a plurality of studs protruding from the outer circumference thereof and projecting parallel to the tubes, by finishing an annular sealing surface which lies intermediate to said tubes and said studs, comprising the steps of:
placing a circular rail about said header and concentric to said annular sealing surface and aligned parallel thereto;
placing a ring in retentive engagement with said rail and rotatable thereon;
selecting a surface finishing tool having a tool support and having a feed adjustment which is adjustable in two dimensions relative to said support;
attaching said tool support to said ring in a fixed circumferential position thereon such that said tool support projects beyond and over said studs, and said tool may be adjusted axially of said ring so as to engage the annular



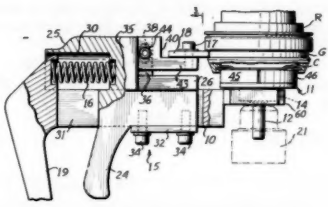
sealing surface and cut same to a desired depth, and said tool may also be adjusted radially of said ring so as to sweep the full radial width of the annular sealing surface; and
concurrently rotating said ring on said track, operating said tool, and varying said feed adjustment so as to finish the sealing surface.

3,848,372

METHOD FOR POLISHING A SEAMING ROLL

Roy M. Peebles, c/o Sheldon Little Company, 1228 Zonolite Rd. N.E., Decatur, Ga. 30306

Division of Ser. No. 114,200, Feb. 10, 1971, Pat. No. 3,745,718. This application July 11, 1973, Ser. No. 378,208
Int. Cl. B24b *1/00*
U.S. Cl. 51—289 R **1 Claim**



1. A method for polishing a seaming roll on a can closing machine in which the seaming roll remains on the machine in completely assembled condition, said method including the steps of gripping the seaming roll with a chuck and rotating the chuck thereby to rotate the seaming roll; positioning an abrasive material in alignment with the area of the seaming roll to be polished; holding the abrasive material in alignment while moving the abrasive material toward the seaming roll; and urging the abrasive material with a substantially constant force against the seaming roll while the seaming roll is rotated.

3,848,373

METHOD FOR THE TREATMENT OF WORKPIECE SURFACES

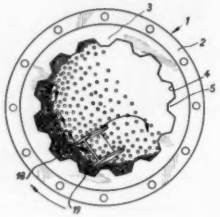
Oskar Pletscher, Zurich, Switzerland, assignor to Gebruder Pletscher, Marthalen, Zurich, Switzerland

Filed Feb. 16, 1972, Ser. No. 226,691

Claims priority, application Switzerland, Feb. 22, 1971, 2522/71

Int. Cl. B24b *1/00*

U.S. Cl. 51—313 **7 Claims**



1. A method of treating the surfaces of workpieces comprising the steps of:

A. Introducing a quantity of particles into a treatment chamber, which quantity has a volume which is substantially less than the volume of said chamber;

B. Introducing a quantity of a friction reducing medium to said chamber, said quantity being sufficient only to coat said particles and workpieces;

C. Introducing workpieces to be treated to said chamber;

D. Rotating said chamber lifting said particles to an area in said chamber which is substantially higher and is removed from the surfaces of the workpieces, placing said particles in the state of a free falling stream of particles, and freely rotating said workpieces; and

E. Causing said free falling stream of particles to impinge on the major portion of the surfaces of the workpieces whereby the surfaces being so treated are open to the action of the sliding motion of the particles, assisted by the friction reducing medium, to thereby treat the surfaces of said workpieces.

3,848,374

SANDING DRUM STRUCTURE IN A DRUM SANDER

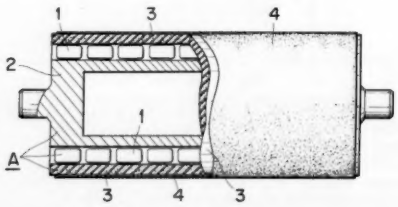
Katsuji Hasegawa, Nagoya, Japan, assignor to Meinan Machinery Works, Inc., Aichi-Pref., Japan

Filed Dec. 29, 1972, Ser. No. 319,728

Claims priority, application Japan, Dec. 28, 1971, 46-471288

Int. Cl. B24d *9/02*

U.S. Cl. 51—373 **9 Claims**



1. A sanding drum structure, comprising:

a sanding drum base having a substantially cylindrical peripheral surface;

a tubular inflatable jacket surrounding said peripheral surface, said jacket comprising radially foldable bellows means inflatable by pressurized fluid so that when pressurized fluid is supplied thereto said jacket expands radially to snugly engage said peripheral surface of said base and to define a substantially cylindrical outer surface, and when pressurized fluid is discharged therefrom said jacket folds in a radial direction;

a cylindrical sleeve body surrounding said jacket, said body being made of resiliently stretchable material and having an internal diameter larger than the diameter of the peripheral surface of said base to define therebetween an annular zone in which said jacket is disposed, said body being expanded radially outwardly when said jacket is expanded;

a seamless cylindrical sanding member separate from and surrounding said body and adapted to be releasably frictionally engaged with the outer surface of said body when said jacket and said body are expanded, said sanding member being separable from said body when said jacket is folded.

ERRATUM

For Class 52—36 see:
Patent No. 3,848,364

ERRATUM

For Class 52—157 see:
Patent No. 3,848,367

3,848,375

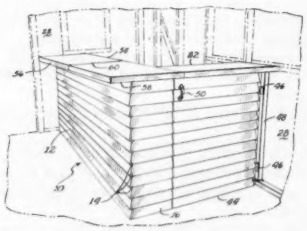
PORTABLE FURNITURE DEVICE

Benjamin White, 7723 S. Michigan, Chicago, Ill. 60619

Filed Oct. 3, 1973, Ser. No. 403,063

Int. Cl. A47b *96/14*

U.S. Cl. 52—36 **10 Claims**



1. A portable furniture device adapted to be installed in and removed from a particular location in an edifice having a floor, comprising:

a vertical front panel;

a vertical side panel secured by hinges to said front panel and adapted for pivotal movement relative to said first panel about said hinges;

one end of said front panel being removably attached to said edifice;

a first horizontal top panel fastened by hinge means to said edifice above said front panel and adapted to lie adjacent and be supported by said front and side panels in one position and to be rotated to a second vertical storage position about said hinge means;

said first horizontal top panel comprising two members hinged together whereby one member is adapted to be

folded against said other member when said first horizontal top panel is rotated to said second storage position about said hinge means;

door means pivotally attached to said edifice and extending between said edifice and said vertical side panel;

said door means adapted to alternately lie adjacent said edifice or to extend from said edifice;

a second horizontal top panel fastened by additional hinge means to said edifice above said door means and adapted to lie adjacent and be supported by said door means in one position and to be rotated about said additional hinge means to a second vertical storage position.

3,848,376

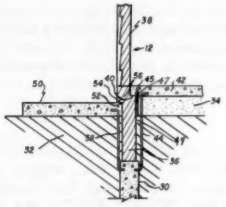
SYSTEM FOR ANCHORING MODULAR HOUSING UNITS

Richard R. Elmore, Herrin, Ill., assignor to Dura-Plex Industries, Peoria, Ill.

Filed Sept. 15, 1972, Ser. No. 289,485

Int. Cl. E02d *27/00*; **E04b** *5/32*, *1/35*

U.S. Cl. 52—169 **3 Claims**



1. In a housing unit, a prefabricated, unitary wall panel having an upper portion extending above a grade level and delimiting an outer perimeter of a portion of an interior area of said unit and a footing below the grade level and supporting said wall panel, and anchoring means for said wall panel comprising a base wall panel portion offset toward said interior area portion from said upper portion of said wall panel for forming a ledge at said perimeter of said interior area portion, a layer of concrete spaced from said footing and extending over said ledge for anchoring said wall panel with said layer and over said interior area portion for forming a part of a floor of said unit, and at least one locking member connected to said base portion of said wall panel and extending from said wall panel and above said ledge into said layer of concrete for locking said wall panel and said layer against separation in a direction normal to said wall panel.

3,848,377

MAT FOUNDATION

Masahi Mori, No. 91 Aza-Matsuogawa, Zaohango, Yamagata-shi, Yamagata-ken, Japan

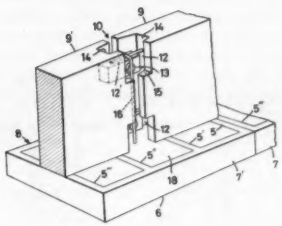
Filed Apr. 18, 1973, Ser. No. 352,177

Claims priority, application Japan, Sept. 2, 1973, 48-16261

Int. Cl. E02d *27/00*

U.S. Cl. 52—169 **2 Claims**

1. A mat foundation comprising in combination a foundation lattice framework of lattice frames juxtaposed on the bottom of a pit excavation, said lattice frames having transverse bars formed in the shape of an inverted trapezoid; vertically elongated foundation blocks having lateral joining sections aligned on the foundation lattice framework, each of said foundation blocks being so disposed as to be astride adjacent lattice frames; adjacent joining section of the foundation blocks being so disposed as to be located above open spaces of the foundation lattice framework; notches on the joining sections to facilitate the securing of the joining members; metal tongue, groove and pin joint members connecting said joining section to each other, said tongue in one joining section entering the groove of another joining section to be held by said pin; a vertical reinforcing bar fixed to the joining members, the lowermost ends of the reinforcing bar being inwardly bent and extending into open space of the foundation lattice framework, the open space and the joints being filled with concrete.



3,848,378

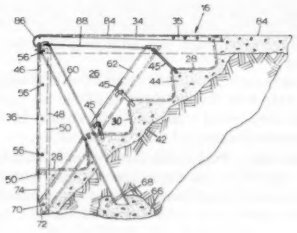
STAIRS FOR SWIMMING POOLS

Donald H. Witte, York, Pa., assignor to Fox Pool Corporation, York, Pa.

Continuation-in-part of Ser. No. 223,837, Feb. 7, 1972, abandoned. This application Aug. 18, 1972, Ser. No. 281,754

Int. Cl. E04f *11/00*; **E04h** *3/16*

U.S. Cl. 52—184 **16 Claims**



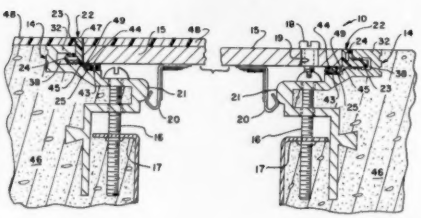
10. A swimming pool having a sidewall in combination with stairs comprising a preformed shell extending rearwardly from said sidewall and said shell having opposite substantially planar sides and a series of stair tread and riser panels connected together and to said sides of said shell, the forward edges of said sides terminating in laterally extending planar flanges, means connecting end portions of said sidewall of said pool respectively to said flanges on each side of said stair shell in watertight manner, mounting members extending along the inner surfaces of said flanges, means connecting said members to said flanges adjacent said sidewalls of said shell, and structural brace members connected directly to said mounting members at opposite sides of said shell and extending therealong, rearwardly from said flanges, said brace members being adapted to be anchored to the earth adjacent opposite sides of said stair shell to brace said shell and sidewall of said pool.

3,848,379

REVERSIBLE TRIM STRIP WITH ATTACHED GASKET FOR AN UNDERFLOOR ELECTRICAL CABLE TRENCH

John O. Hazen, Monaca, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Jan. 10, 1973, Ser. No. 322,397
Int. Cl. E04b 5/48; E04f 17/08
U.S. Cl. 52—221 11 Claims



1. In an underfloor electrical trench assembly having spaced-apart linear screed strips presenting horizontally disposed, upwardly presented supporting ledges; a cover plate spanning the distance between said linear screed strips and having lateral edge portions of its bottom surface confronting said supporting ledges; screed lips, one presented above the level of each linear screed strip and laterally spaced-apart from the adjacent side edge of said cover plate thereby to provide a space therebetween; the improvement comprising:

reversible trim strips, one for each linear screed strip and being reversible relative to the linear screed strip between first and second strip positions, each of said reversible trim strips comprising:

a tile-stop extension;

a tongue joined to said tile-stop extension, the height of said tongue being less than that of said tile-stop extension, and a gasket strip joined to and extending angularly from said tile-stop extension and said tongue;

said tongue being disposed in said space with an upper edge thereof substantially coplanar with the upper surface of said cover plate when said trim strip is in the first strip position;

said tile-stop extension being disposed in said space with an upper extremity thereof elevated above the upper surface of said cover plate when said trim strip is in the second strip position; and

said gasket strip being disposed between said supporting ledge and the lateral edge portion of the bottom surface of said cover plate when said trim strip is in said first strip position and in said second strip position.

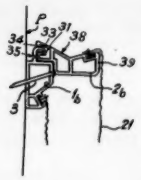
3,848,380

DEVICE FOR FIXING SHEETS TO SURFACE

Marcel Assael, 12 Place Maurice Gillet, 29 N Brest (Finistere), France

Continuation-in-part of Ser. No. 183,507, Sept. 24, 1971, abandoned. This application Feb. 14, 1973, Ser. No. 332,271
Claims priority, application France, Oct. 1, 1970, 70.35461; Jan. 15, 1971, 71.01278; June 14, 1971, 71.21423; Feb. 15, 1972, 72.04991
Int. Cl. E04b 1/347; E04c 3/32; A47h 23/00
U.S. Cl. 52—222 10 Claims

1. A wall mounting device comprising a covering sheet adapted to overlie a surface, a bar adapted to be secured to a surface, a movable strip formed of at least one piece and complementarily hinged to said bar at an edge of said strip, said strip having an opposite edge constituting an edge means for supporting a corresponding edge of a covering sheet, complementary assembling means for securing said strip in a folded-back compact position parallel said bar adjacent said surface, in said surface, in said folded-back compact position being in a direction opposed to that in which said covering sheet extends, said covering sheet being tensioned in said



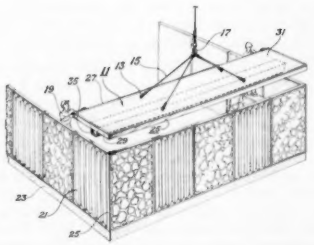
position, complementary abutment means provided on said bar and on said strip for holding said strip in an angular open position relative to said bar for fixing a covering sheet thereon, and said edge means of said strip including fastening means for securing said corresponding edge of said covering sheet against said edge means, prior to moving said strip into said folded back compact position.

3,848,381

DECK PANEL FOR ROOF AND FLOOR STRUCTURES

David E. Bloxom, Fort Worth, Tex., assignor to Speed Fab-Crete Corporation, International, Fort Worth, Tex.

Filed May 29, 1973, Ser. No. 364,302
Int. Cl. E04b 1/04
U.S. Cl. 52—236 6 Claims



1. A combination structure for buildings and the like comprising:

a. a foundation;

b. a plurality of wall panels emplaced on said foundation; each said wall panel having a peripheral metallic skeleton that is structurally adequate to bear its share of the design load for said building such that said wall panels alone are sufficient without requiring supplemental structural supports, and a lightweight concrete center portion that has a desired facade and interior finish and that adds its structural strength, particularly in compression, to said wall panel for a large additional safety factor; said wall panels being welded together at their adjacent metallic peripheral skeletons; and

c. a plurality of deck panels emplaced, respectively, adjacent each other and connected to said wall panels at the desired height; each said deck panel including a continu-

ous peripheral skeleton formed of a plurality of connected together metallic members; said skeleton having a structural strength adequate to bear a predetermined design load without requiring any additional supports; a lightweight concrete center portion carried by said peripheral skeleton; said concrete center portion including a downwardly depending beam of lightweight concrete extending longitudinally thereof; a plurality of first and second panel reinforcing bars embedded in said concrete center portion and connected with said peripheral skeleton; said plurality of first and second panel reinforcing bars extending longitudinally and transversely of said panels; and a plurality of beam reinforcing bars embedded in and extending longitudinally of said depending beam of lightweight concrete; said plurality of beam reinforcing bars being unprestressed at the time of pouring said concrete center portion such that said panel has a flat upper surface that does not bow upwardly in the longitudinal center thereof.

3,848,382

BUILDING FRAME STRUCTURE

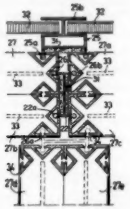
Eberhard G. Rensch, Lerchesbergring 24, Frankfurt/Main, Germany

Continuation of Ser. No. 218,626, Jan. 17, 1972, abandoned, which is a division of Ser. No. 44,848, June 9, 1970, Pat. No. 3,706,169. This application July 5, 1973, Ser. No. 376,448

Claims priority, application Germany, June 9, 1969, 1929175; Mar. 10, 1970, 2011258

Int. Cl. E04b *2/72*

U.S. Cl. 52—263 **5 Claims**



1. A building-frame structure comprising a plurality of upstanding wall members each having a profiled edge provided with a vertical slit and with an undercut behind said slit forming an enlarged vertical channel; a connector provided with a plurality of substantially parallel vertical ribs each traversing an edge slit of a respective wall member and terminating in a vertical bead received in said channel behind said slit, said connector including a web bridging said ribs, the profiled edges of said wall members being coplanar and spaced from said web; and a sealing layer inserted between said coplanar edges and said web.

3,848,383

STRUCTURAL SURFACE METAL SHINGLE COVERING

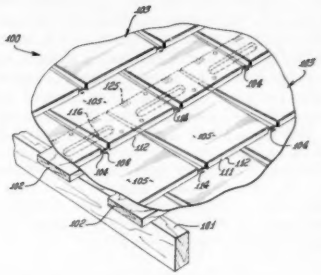
Robert J. Wilson, 1076 W. San Bruno, and Robert W. Naden, 39880 Ave. 7½, both of Fresno, Calif.

Continuation-in-part of Ser. No. 97,773, Dec. 14, 1970, Pat. No. 3,720,031, which is a continuation-in-part of Ser. No. 817,607, March 24, 1967, abandoned. This application Feb. 26, 1973, Ser. No. 336,087

Int. Cl. E04d *1/18*

U.S. Cl. 52—533 **5 Claims**

1. In a roof structure having a plurality of horizontal boards providing a supporting surface, a plurality of horizontally arranged courses of formed metal shingle elements each having a shingle wall of trapezoidal shape and generally planar, downturned tapering side flanges on said wall, a downturned bottom butt flange on said wall having a bottom edge adapted to contact corresponding walls of the next lower course of shingle elements; a plurality of flashing strip elements extending beneath and between edges of adjacent shingle elements of a course and positioned by said butt flanges; and means securing said shingle elements to said supporting surface; each shingle wall having a lower portion having a planar uninterrupted surface exposed to weather and an upper portion covered by the lower portion of the next above adjacent shingle elements and associated flashing elements in the next above course of shingle elements; wherein the improvement comprises:



means for minimizing lateral and longitudinal distortion of each shingle wall out of its normal preformed plane at the contact zone of the butt flange edges of shingle elements of the next above course, said distortion minimizing means comprising

indentation means extending laterally and longitudinally in the upper portion of each shingle wall above the contact of the butt wall of the upper shingle therewith and spaced from the side flanges thereof;

said means for securing each shingle element being located in the portion of said shingle wall between said indentation means, said side flanges and above said butt wall contact of the upper shingle with the lower portion whereby said planar surface of the lower portion and edge of the butt wall of the upper shingle form a virtually uniform joint line appearance.

3,848,384

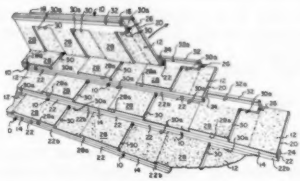
COMPOSITION SHINGLE

James W. Eaton, Elgin, and Allan J. Luck, Marengo, both of Ill., assignors to Masonite Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 229,420, Feb. 25, 1972, abandoned. This application July 2, 1973, Ser. No. 375,626

Int. Cl. E04d *1/20, 1/26, 1/36*

U.S. Cl. 52—420 **7 Claims**



1. A shingle system comprising at least one pair of shingles, each shingle having a solid rectangular base of thin composition sheet material with an undersurface and an opposite outer surface having at least a portion thereof adapted for exposure

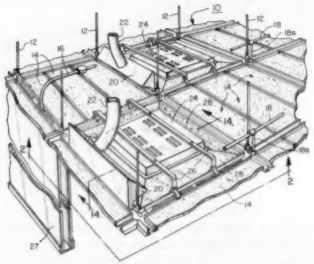
to the weather, said bases having parallel elongated upper and lower edges and a first narrow strip along said lower edges secured beneath said undersurface for use in securing the lower edges of said shingle bases to the surface of a supporting roof or wall structure; said shingles including a second narrow strip along said upper edge secured above said outer surface of said base for abutting engagement with a first strip of a shingle laid in an adjacent row; each of said shingles including a tab member of thin composition sheet material having an underside adapted to overlay the outer surface of a shingle base and an opposite outer surface having at least a portion adapted for exposure to the weather, each of said tab members including an elongated strip comprising an upper edge portion thereof and a plurality of longitudinally spaced apart shingle tabs integral therewith extending downwardly from said elongated strip defining alternate open spaces between said tabs exposing the outer surface of an underlying base, said open spaces of one tab member dimensioned to match the tabs of the other tab member of said pair of shingles, each of said open spaces defined by a lower edge segment of said elongated strip and a pair of opposite side edges of adjacent tabs, each tab including a lower edge spaced downwardly from said lower edge segments by a dimension whereby said tab lower edges are aligned with said lower edge of an underlying shingle base and the lower edge segments adjacent thereto are aligned with the tab lower edges and the lower edge of an underlying base in a next adjacent upper row of shingles, and means for securing said elongated strips of said tab members adjacent one of said first and second strips.

3,848,385

MODULAR CEILING CONSTRUCTION

Neil J. Thompson, Palatine, Ill., assignor to National Ceiling Corporation, Chicago, Ill.

Filed June 12, 1970, Ser. No. 45,638
Int. Cl. E04b *5/52;* **F24f** *13/06*
U.S. Cl. 52—475 **21 Claims**



20. The modular grid system of claim **19** in which said elongated members of said main runner means are each formed as channel members of a generally U-shaped cross-section and each have exterior support flanges extending along opposite sides of said channel member and in which said elongated members of said secondary runner means are each of a generally T-shaped cross-section.

3,848,386

FIXTURE SUPPORT

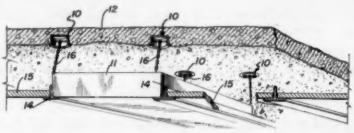
David J. Catallozzi, 31 Harvey Ln., Westboro, Mass. 02169

Continuation of Ser. No. 150,385, June 7, 1971, abandoned. This application June 11, 1973, Ser. No. 368,709
Int. Cl. E04b *5/00*
U.S. Cl. 52—706 **4 Claims**

1. A fixture support adapted to be attached to the upper surface of a concrete form so as to subsequently be embedded in a concrete ceiling poured on the form, comprising

a. a main body having a cylindrical tubular portion with an integral closure at a first closed end and an integral outwardly-extending flange at a second open end extending outwardly of the tubular portion,

b. a bar extending transversely across the tubular portion and extending externally thereof a substantially greater distance than the flange, the bar extending across the



tubular portion at a position adjacent the closed end, and

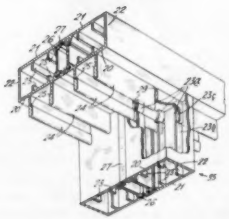
c. an elongated, flexible element having a first end attached to the bar and a second end extendable well beyond the limits of the main body to a point a greater distance from the main body than any straight distance within the main body, the support including a closing means for attaching the entire flexible element within the main body until the body is attached to the form.

3,848,387

EXTRUDED SECTION AND STRUCTURES INCORPORATING SUCH SECTION

Joseph A. Hafner, Stoney Creek, Ontario, Canada, assignor to John Anderson Cuddie, Hamilton, Ontario and Alcide Melanson, Burlington, Ontario, Canada, part interest to each

Continuation-in-part of Ser. No. 192,425, Oct. 26, 1971, abandoned. This application July 3, 1972, Ser. No. 268,923
Claims priority, application Canada, Feb. 7, 1972, 134047
Int. Cl. E04c *3/07;* **E04b** *1/343*
U.S. Cl. 52—735 **11 Claims**



1. An extruded structural member including an elongated structural element with two longitudinally extending side faces directed away from one another, a pair of spaced apart longitudinally extending first flanges integral with said element and projecting from one of the side faces thereof and a pair of spaced apart longitudinally extending second flanges integral with said element and projecting from the other side face thereof, with said first flanges having inner mating faces spaced apart a first predetermined distance and said second flanges having outer mating faces spaced apart by said first predetermined distance such that the second flanges of one such member will fit slidably between the first flanges of another such member and with each flange of one of said pairs of flanges having a ledge in its mating face, the ledges extending the length of the flange facing towards the adjacent side face of the member and spaced therefrom a second predetermined distance throughout the length of the flange, each flange of the other pair of flanges having a resilient projection

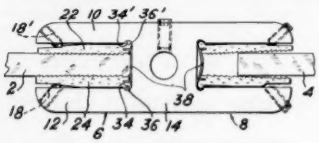
integral therewith, projecting from its mating face, each such projection having a free edge spaced from an end of the structural element by said second predetermined distance, facing away from said end and extending across the associated mating faces in a direction transversely to said side faces of said structural element so that in assembling two such structural members with said end of one abutting against said one side face of the other, the edges of the resilient projections of the one will engage under the ledges of the other to hold the two members together at a predetermined angular relationship.

3,848,388

MULTI-DIRECTIONAL CONNECTING ELEMENT FOR PANELS

Serge Norbert Emile Bretche, 82 avenue Roger Salengro, Chaville, France (92370)

Filed Feb. 1, 1973, Ser. No. 328,509
Claims priority, application France, Feb. 8, 1972, 72.04186
Int. Cl. F16b *5/06*
U.S. Cl. 52—753 D **5 Claims**



1. A connecting element for panels
comprising a connecting element having the shape of a partial cylindrical surface defined by two parallel planes, longitudinal grooves in said surface parallel to said planes surrounded on three sides by faces of said surface, each groove having two sides constituted by two parallel ribs and by an end portion constituted by a junction surface between said two ribs, an internally threaded bore in at least one of the sides of each groove which opens into said groove, the axis of each bore being parallel to the plane which defines the cylindrical surface and forming an obtuse angle with the internal face of the corresponding rib, a screw in each bore,
packing-strips in said grooves, each packing-strip engaging one of the internal faces of said grooves, means for preventing sliding motion between said packing-strips and said panel on each of said packing-strips, a recess adjacent the bottom of said groove, a shouldered end for each packing-strip engaging in the corresponding recess and a curved spring blade joining the two packing-strips in a groove at said shouldered ends.

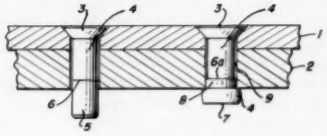
3,848,389

BIMETAL RIVETS

Roland Howard Gapp, South Laguna; Marcos Daniel Alazraki, Orange, and John Harper, Santa Ana, all of Calif., assignors to Textron Inc.

Continuation of Ser. No. 888,999, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 733,567, May 31, 1968, abandoned. This application Apr. 19, 1972, Ser. No. 245,408
Int. Cl. F16b *5/04, 19/06*
U.S. Cl. 52—758 D **16 Claims**

1. In combination a plurality of structural members having axially aligned apertures therein, and a bimetal rivet of a predetermined grip length extending through said aligned apertures fastening said members together, the meeting areas of said members forming a high shear zone, said rivet comprising
a solid integral head and shank section of a first metal having a high shear and tensile strength at room temperature and up to at least 1,000° F., said head and shank section consisting of an enlarged head portion and a cylindrical shank extending therefrom,
a solid tail section of a ductile and readily formable second metal being compatible with the metal of the head and shank section for integral union therewith,
the shank of said head and shank section and said tail section being of the same diameter,
said tail section and the shank of said head and shank section being united end to end and forming an interface



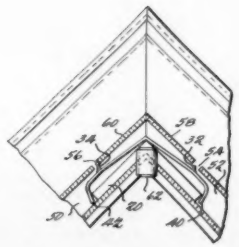
between the entire cross-sectional area of their meeting ends,
said interface comprising an integral welded joint,
said interface being located within the grip length of said rivet, and only the shank of said head and shank section extending across said high shear zone, said tail section projecting beyond the adjacent surface of the structural member most remote from said head and being upset, thereby securely clamping said structural members together.

3,848,390

WINDOW FASTENER

William S. Anderson, Berwyn, Pa., and Roman Gerken, Delran, N.J., assignors to United States Banknote Corporation, New York, N.Y.

Filed Jan. 12, 1973, Ser. No. 322,943
Int. Cl. E06b *1/14*
U.S. Cl. 52—758 H **3 Claims**



1. A corner framing fastener for fastening together a pair of framing rails forming a corner comprising:
an L-shaped bottom spring member having a threaded aperture at the apex thereof;
a top spring member having leg portions extending outward from an apex and forming an obtuse angle with respect to each other, each leg portion terminating in a curved end for engaging an end of said L-shaped member and a tab extending outward from each leg portion for each engaging a slot in one of said pair of framing rails forming a corner; and
a screw member with one end thereof passing through said threaded aperture with said screw member engaging the

threads thereof and said one end engaging the apex of said bottom spring member for exerting a force on the apex of said top spring member to urge that apex away from said bottom spring member and cause said tabs to engage said respective slots to pull said framing rails toward each other.

3,848,391

PROCESS FOR GAS-FREE PACKAGING OF MOLTEN ALKALI METAL

Helmut Knorre, Seligenstadt, and Peter Leidl, Grossauheim, both of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Mar. 5, 1973, Ser. No. 337,985
Int. Cl. B65b *31/02*
U.S. Cl. 53—7 **2 Claims**

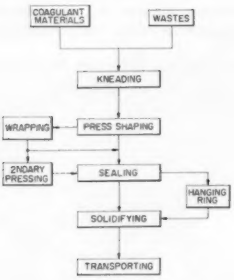
1. A process for the gas-free packaging of a molten alkali metal in a can capable of accepting a clamp-on lid, said process comprising filling said can with said molten metal, applying a lid to said can, closing said can by clamping said lid to said can, inventing the resulting closed can so that the exposed surface of said lid faces downward, and cooling the inverted can.

3,848,392

METHOD FOR DISPOSAL OF INDUSTRIAL WASTES

Kunitoshi Tezuka, Tokyo, Japan, assignor to Tezuka Kosan Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1973, Ser. No. 406,395
Claims priority, application Japan, Oct. 18, 1972, 47-103650; June 23, 1973, 48-71119
Int. Cl. B65b *63/02*
U.S. Cl. 53—21 R **11 Claims**



1. A method for disposal of industrial wastes which comprises the steps of incorporating a coagulant into the starting waste, kneading the mixture, press-shaping the resulting kneaded mixture, sealing the resulting shaped article with a cement material, and aging and solidifying the sealed, shaped article.

3,848,393

PACKAGING MACHINE AND PROCESS

Alfred C. Monoghan, Warren, N.J., assignor to Monaghan Automated Systems, Inc., Greenbrook, N.J.

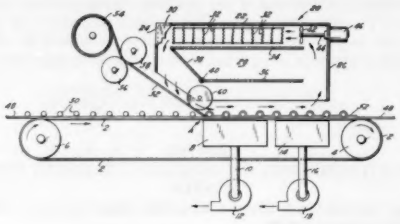
Continuation of Ser. No. 112,574, Feb. 4, 1971, abandoned. This application Dec. 18, 1972, Ser. No. 316,097
Int. Cl. B65b *31/00*
U.S. Cl. 53—22 A **10 Claims**

1. A process for the continuous skin packaging of articles which comprise the steps of:

forming at least two zones of reduced pressure,

providing said first zone with an area of greater reduced pressure than the pressure in said second zone to evacuate the bulk of the air in said first zone,

continuously moving a packaging substrate upon which the articles are sequentially directed through said zones,



continuously softening a film of plastic material, and

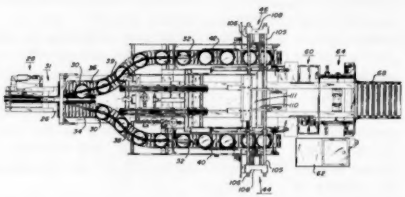
continuously feeding said softened film at an angle to said substrate to the front of said zones and in sequence over the articles positioned on said substrate whereby said film is shaped around the articles and adhered to itself.

3,848,394

APPARATUS AND METHOD FOR ORIENTING AND CASE PACKING EARED CONTAINERS

Raymond A. Heisler, 657 Dakota Trl., Franklin Lakes, N.J. 07417

Filed June 26, 1973, Ser. No. 373,752
Int. Cl. B65b *5/08, 35/56, 43/28*
U.S. Cl. 53—26 **39 Claims**



1. Apparatus for receiving containers in a single file array and to equally divert said containers to two conveyors and to then insert an equal number of containers substantially simultaneously into the opposite open ends of an erected carton and thereafter delivering said carton to closing, gluing and sealing means after which the carton is delivered from the apparatus, said apparatus including: (a) a delivery means adapted to deliver a supply of eared containers to a receiving station; (b) a diverting means at said receiving station, said diverting means adapted to alternately feed every other container to and along a first transporting conveyor disposed along one side of the apparatus and to alternately feed the other container to and along a second transporting conveyor disposed along the other side of the apparatus; (c) means for erecting and delivering an erected carton to an inserting station whereat the carton has both its ends retained in an open condition, each open end of the carton positioned adjacent a container inserting apparatus; (d) means in association with said conveyor for presenting each container to an inserting station with the ears of the container in a determined oriented condition; (e) circuit control means adapted to determine that a required quantity of containers are in place in way of each of the inserting apparatus and that an open erected carton is in its required place; (f) inserting apparatus associated with

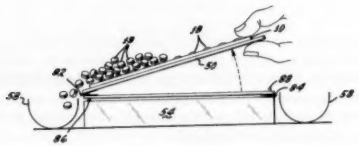
each transporting conveyor, each apparatus having an ear engaging arm disposed to slidably engage the side of a container as the container is moved from the conveyor to and into the open end of a carton, said engaging arm engaging one side of an ear to orient the axis of the ear at a determined angle to the side of the receiving carton, and an ear retaining finger associated with the ear engaging arm, said finger and arm retaining an ear of the container at a determined orientation in the carton during insertion of the container to achieve the carton filled condition, and (g) means for moving the filled carton to sealing and delivery means.

3,848,395

MEANS FOR AND METHOD OF DISPENSING MEDICINAL TABLETS AND CAPSULES

George A. Totten, 200 N. El Camino Real, Oceanside, Calif. 92054

Filed Sept. 19, 1973, Ser. No. 398,574
Int. Cl. B65b *67/02*
U.S. Cl. 53—35 **11 Claims**



1. Means for separating a selected number of medicinal tablet or capsule objects from a bulk supply of said objects, comprising:

a. a tray having a planar working surface,

b. a template, positioned on said working surface, having rows and files of openings, each of said openings being of a size to accept only one of said objects, whereby upon dumping of said objects from said bulk supply on said template and by manipulation, all of the openings will be filled,

c. a base and pivotal mounting means between said base and said tray so that said tray can be tilted toward an end thereof to pour off said objects under force of gravity, and

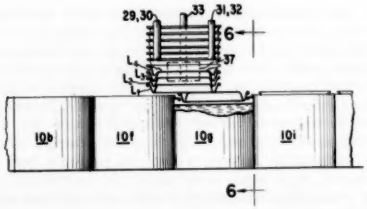
d. a receptacle under said end of said tray located to receive said objects when poured off said end of said tray by tilting of said tray.

3,848,396

MEANS FOR DEPOSITING LIDS ON FILLED CONTAINERS AND THEN SEATING SAID LIDS IN SEALING CONDITION ON SUCH CONTAINERS

Richard Schmidt, Crestwood, N.Y., assignor to Procter Paint and Varnish Co., Inc., Yonkers, N.Y.

Filed Nov. 9, 1973, Ser. No. 414,456
Int. Cl. B65b *7/28*; **B67b** *1/04*
U.S. Cl. 53—43 **17 Claims**



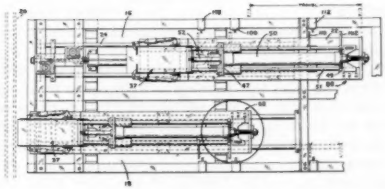
1. A lid-applying machine for closing filled containers comprising a feed line on which said containers are movable, a lid-depositing means positioned at a station along said feed line, means for advancing filled containers in abutting relationship along said feed line to and away from said lid-depositing means at said station, said lid-depositing means including means for maintaining a stack of lids, hold-back presser means movable reciprocally toward and away from said stack of lids and removably engageable with lids in said stack, and actuating means located along said feed line operated by said containers to actuate said presser means to effect momentary release and reengagement of said stack for deposit of a single lid onto a lidded container at said station, means for retaining said single lid against movement with said lidded container whereby movement of said lidded container along said feed line causes said released single lid to be applied to the next adjacent filled container.

3,848,397

BOX FILLING DEVICE

Russell W. Allen, Pompton Plains, N.J., assignor to Container Equipment Corporation, Bloomfield, N.J.

Filed Apr. 20, 1973, Ser. No. 353,169
Int. Cl. B65b *63/02*
U.S. Cl. 53—124 D **13 Claims**



1. The receptacle for transporting material and inserting said material into a container comprising:

a bottom surface having a front and back side;

a rear wall disposed above said bottom surface, constructed and arranged to move forward and backward above said bottom surface;

first and second side walls extending above said bottom surface;

opening lip means movably connected to at least one of said bottom surface and side walls; and

lip moving means connected to at least one of said bottom surface and said side walls to move one end of said lip means transverse to the plane of said side wall to increase and decrease the size of the front opening of said receptacle;

wherein said opening lip means comprise first and second lip means operatively associated with said first and second side walls respectively; and

said lip moving means move said first and second lip means in opposing manner; and

wherein first and second lip means are pivotally mounted to said first and second side walls; and

wherein said lip moving means comprise translation extension means to produce translational movement to actuate said opening lip means; and

wherein said lip moving means further comprise means to convert the translation movement of said translation extension means to rotary movement to pivot said opening lip means;

further comprising shoe means connected to said rear wall and disposed parallel to and adjacent said bottom surface to move along said bottom surface to gather material in said container for movement to the front opening of said container; and

further comprising:

bellying bar means disposed on the bottom surface of said

container extending from said bottom surface above said shoe means; and

said shoe means comprising segments disposed on either side of said bellying bar.

3,848,398

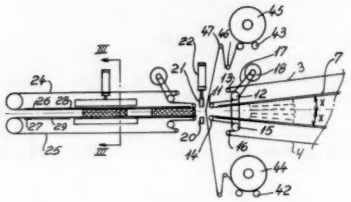
APPARATUS FOR WRAPPING COMPRESSIBLE ARTICLES

Poul Suhr, Kirkebakken 17, DK-2600 Glostrup, Denmark

Filed May 8, 1973, Ser. No. 358,338

Int. Cl. B65b *63/02*

U.S. Cl. 53—124 C **4 Claims**



1. An apparatus for wrapping compressible articles in sheet material, comprising two conveyor belts converging in their feeding direction, means for supplying wrapping sheet material from two sides to a position in front of the front ends of the conveyor belts, sealing and severing means provided between the front ends of the conveyor belts and a holding mechanism, said heat sealing and severing means comprising two heat sealing jaws which are movable relative to one another transversely of the direction of movement of the articles, two guide plates between the front ends of the converging conveyor belts and the heat sealing jaws, the distance between the two guide plates being slightly greater than the minimum distance between the converging belts, and the means for supplying wrapping sheet material being arranged to supply this material to a position following the guide plates in the direction of travel of the articles.

3,848,399

SUGAR CANE HARVESTERS

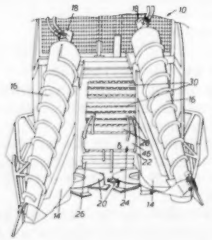
Sam Robert Makeham, Bundaberg, Australia, assignor to Massey-Ferguson (Australia) Limited, Sunshine, Victoria, Australia

Filed Apr. 30, 1973, Ser. No. 355,860

Claims priority, application Great Britain, May 6, 1972, 21201/72

Int. Cl. A01d *45/10*

U.S. Cl. 56—13.9 **6 Claims**



1. In a mobile sugar cane harvester comprising ground wheels, a body portion supported on said ground wheels, a pair of crop gathering members defining a crop-receiving throat, said crop gathering members being mounted on said body portion, and a pair of cane cutters mounted on said body portion, said cane cutters being connected to a drive train whereby the cutters may be contra-rotated about respective upwardly-extending axes to sever canes as the canes pass through the throat, each cane cutter comprising a blade support member, said blade support member being coupled to said drive train, and a blade mounted at the periphery of said blade support member; the improvement wherein said blade support member comprises a flat disc, and a flange, said flange being fixed to the periphery of said disc and extending axially downwardly therefrom with respect to the axis of rotation of said cutters, said blade being mounted at the lower edge of said flange and downwardly offset from at least the inner portion of said blade support member and wherein said flange is in the form of a cylinder, said cylinder and said disc together defining a drum-shaped structure.

3,848,400

CONTROL MECHANISM FOR WATCH MOVEMENTS

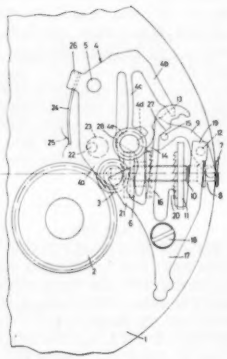
Josef Fluck, Grenchen; Kurt Schaller, Lengnau, and Roland Zaugg, Grenchen, all of Switzerland, assignors to A. Schild S. A., Grenchen, Switzerland

Filed Mar. 6, 1974, Ser. No. 448,564

Claims priority, application Switzerland, Mar. 23, 1973, 4276/73

Int. Cl. G04b *27/04*

U.S. Cl. 58—68 **7 Claims**

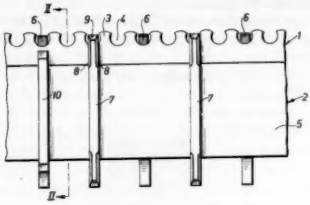


1. A control mechanism for mechanical watch movements comprising a control stem, a setting-lever pivoting on a movement plate and linked to the stem, a setting-lever spring capable of securing the stem in several different axial positions, a clutch-wheel movable on a square of the stem, a winding-pinion coaxial with the stem, and a setting-wheel intended to be driven in rotation by the clutch-wheel in at least one of the said positions of the stem, and further comprising a control plate pivoting on the movement plate and having at least two arms, one of these arms being resiliently deformable with respect to the other arm, which is rigid, and a second spring causing the said control plate to rotate around its pivoting point, and wherein the said resiliently deformable arm is engaged in a groove of the clutch-wheel while the rigid arm carries the said setting-wheel.

3,848,401
GRASS CUTTER

Per Sigvard Hast, Hastholmsvagen 10, S-11644 Stockholm, Sweden

Filed Sept. 28, 1973, Ser. No. 401,958
Claims priority, application Sweden, Sept. 29, 1972, 12581/72
Int. Cl. A01d 55/04
U.S. Cl. 56—296 4 Claims



1. In a cutter assembly for cutting grass, hedges and similar vegetation, in which said assembly comprises a holder bar and a cutter bar, both bars having transversely extending teeth, the cutter bar being reciprocatingly movable along a side edge of the holder bar thus causing a cutting action between the teeth, the improved construction according to which the cutter bar is formed as a flat-sided flexible strip and the teeth on the holder bar are disposed alternatingly on both flat sides of the cutter bar, the spacing between the teeth on the holder bar, measured perpendicularly to the plane of the cutter bar, being less than the thickness of the cutter bar, the cutter bar thus being pressed between the teeth on the holder bar and bent to a curved shaped.

3,848,402
SELF ADJUSTING HEDGE AND PIPE RAKE

Melbourne E. Agen, 248 Bunting Ln., Madison, Wis. 53704

Filed July 30, 1973, Ser. No. 383,602
Int. Cl. A01d 7/06
U.S. Cl. 56—400.2 4 Claims

1. A self-adjusting rake for use in confined spaces comprising in combination

a. a handle,

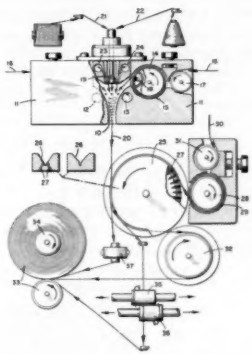
b. a guide head fixed to said handle and configured with a plurality of elongated slots disposed therein which extend through an elevational gradient when said rake is operably positioned for use with the lower end extremities of said slots disposed in nearer mutual adjacency than the upper end extremities thereof,

c. a plurality of tines disposed closely clustered and pivotally affixed at their root ends essentially as extension of said handle to said guide head wherein each said tine has a vertical component of movement when said rake is operably positioned for use, each said tine being disposed separately within one of said slots, said tines being actuated to drop to the lower end extremities of said slots when said rake is raised thereby to be closely clustered along their entire length when said rake is unsupported except by said handle, and to be divergently biased by said guide head being biased downward relative to said tines when said tines are placed down and drawn along a surface being raked, thereby causing said tines to be disposed at the upper end extremities of said slots.

3,848,403
AERODYNAMIC SPINNING OF COMPOSITE YARN

Emilian Bobkowicz, and Andrew John Bobkowicz, both of 1435 St. Alexander St., Rm. 310, Montreal, Quebec, Canada

Filed Aug. 6, 1973, Ser. No. 385,720
Claims priority, application Canada, Nov. 29, 1972, 157798
Int. Cl. D01h 1/12
U.S. Cl. 57—34 HS 20 Claims



1. Method for producing spun yarn which comprises forming an air vortex in a defined chamber, introducing into said chamber staple fibers and permitting said fibers to become helically twisted by said air vortex, consolidating said helically twisted fibers with a tacky substrate to form spun yarn, and linearly winding up said yarn on a collecting roll.

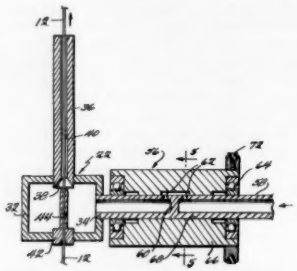
3,848,404
INTERMITTENT TEXTURIZED YARN AND FALSE-TWIST APPARATUS AND PROCESS FOR PRODUCING THE SAME

Joe F. London, Jr., Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Sept. 25, 1972, Ser. No. 291,586
Int. Cl. D02g 1/02, 1/16
U.S. Cl. 57—34 HS 10 Claims

1. A method of texturizing thermoplastic yarn which comprises the steps of continuously feeding a substantially uniformly continuous yarn into and out of a texturizing zone, maintaining a false twist in the yarn within said texturizing zone by continuously imparting a twist to the yarn at a twisting position spaced downstream from an upstream position of restraint, providing a region of closely adjacent surrounding

peripheral confinement along a predetermined short longitudinal extent of the yarn continuously moving between said upstream position of restraint and said twisting position, and intermittently passing superheated steam through said confinement region at a sonic velocity so as to heat-set the false



twist in successive spaced portions of the yarn contacted by said superheated steam while permitting the remaining portions of the yarn to pass out of said texturizing zone with the false twist imparted thereto while moving therethrough removed without being heat set.

3,848,405

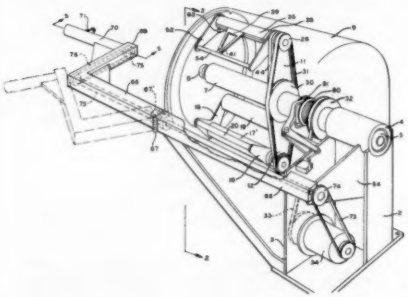
APPARATUS AND METHOD FOR PRODUCING NO-TWIST CENTER PULL ROVING PACKAGES

Harald E. Karlson, Santa Monica, Calif., assignor to Goldsworthy Engineering Inc., Torrance, Calif.

Filed July 29, 1970, Ser. No. 59,261

Int. Cl. D01h *1/04;* **B65h** *54/02*

U.S. Cl. 57—71 **13 Claims**



1. The method of producing a package of a textile fiber strand which incorporates a twist in each turn of the strand in the package; said method comprising locating a strand feeding element in spaced parallel relationship with respect to a nonrotating, nonshiftable mandrel receiving said strand, orbiting said feeding element about said mandrel, simultaneously shifting said feeding element back and forth in parallel relationship with respect to a portion of the length of said mandrel, feeding said strand to said feeding element, winding said strand issued from said feeding element about said mandrel over one end thereof to form a package on said mandrel and thereby incorporate a twist in each turn of said strand during the orbiting and shifting movement of the feeding element about said mandrel, continuously shifting said feeding element outwardly with respect to the mandrel as the diametral size of the package on the mandrel increases, shifting a member axially with respect to said mandrel simultaneously with the shifting movement of the feeding element outwardly and in direct proportion thereto, generating an electrical signal in response to the shifting movement of said last named member and in proportion to the diametral size of the package formed on said mandrel, and reducing the speed of movement of said feeding element in response to and in proportion to said electrical signal.

3,848,406

GLASS FIBER ROVING BAND FOR FIBER REINFORCED PLASTICS

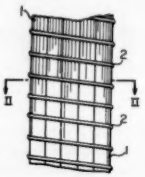
Kiyoshi Tabei, Fujisawa, and Hirokazu Kittaka, Sagamihara, both of Japan, assignors to Nitto Boseki Co., Ltd., Gonome, Fukushima-shi, Japan

Filed Nov. 6, 1972, Ser. No. 303,838

Claims priority, application Japan, Nov. 18, 1971, 46-107912

Int. Cl. D02g *3/38, 3/40, 3/18*

U.S. Cl. 57—149 **1 Claim**



1. A flat glass fiber roving band for a fiber reinforced plastics, said band comprising a plurality of untwisted glass fiber rovings arranged in side-by-side relation with each other to provide said flat band, and fibrous means wound around the glass fiber rovings to provide a transverse strength of the band, only the transverse outside rovings being impregnated with synthetic resin before assembly.

ERRATUM

For Class 58—68 see:
Patent No. 3,848,400

3,848,407

LINK STRUCTURE FOR CHAINS FOR SUPPORTING AND GUIDING ENERGY CONVEYING CONDUCTORS

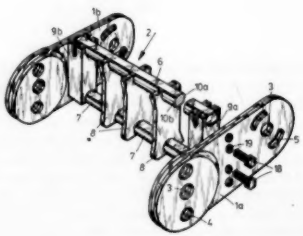
Werner Moritz, Siegen, Germany, assignor to Kobelschlepp Gesellschaft mit beschrankter Haftung, Siegen, Germany

Filed Oct. 24, 1973, Ser. No. 409,238

Claims priority, application Germany, Nov. 11, 1972, 2255283

Int. Cl. F16g *13/00*

U.S. Cl. 59—78.1 **9 Claims**



1. A link structure for use in chains for supporting energy conductors, especially cables and hoses, which includes: a first and a second link member arranged in spaced relationship and

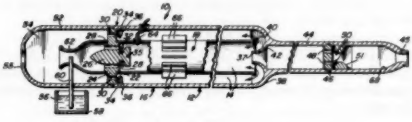
parallel to each other, a web arranged between and connected to said first and second link members while having its longitudinal extension substantially at a right angle with regard to the longitudinal extension of said first and second link members, said web comprising at least two traverse means arranged in substantially parallel and spaced relationship to each other and extending in the longitudinal direction of said web, at least one of said traverse means having two oppositely located rounded sections the contour of which corresponds to that of a cylinder and also having two oppositely located plane sides spaced from each other by a distance considerably less than the maximum distance between said rounded sections, a plurality of spacer webs respectively extending transverse to said traverse means and substantially parallel to each other while being spaced from each other in the longitudinal direction of said web, each of said spacer webs having two end portions at least one of which is provided with an undercut rounded coutout conforming in cross section to said rounded sections of said traverse means, at least one of said traverse means normally resting in said cutouts of said spacer webs and being non-removable therefrom when said rounded sections of said traverse means occupy a first position in the pertaining rounded cutouts of said spacer webs in which position said plane sides of said traverse means form a right angle with the distance line between said at least two traverse means, at least said one traverse means being rotatable from said first position into a second position angularly offset to said first position by about 90° for removal from the pertaining cutouts in said spacer webs, and locking means associated with said rotatable traverse means for preventing accidental turning thereof in the pertaining cutouts of said spacer webs.

3,848,408

COUNTER-WAVE PULSE JET ENGINE

Leo L. Tompkins, 127 Wacaster St., Jackson, Miss. 39209

Filed Feb. 8, 1973, Ser. No. 330,643
Int. Cl. F02k *7/04*
U.S. Cl. 60—248 **10 Claims**



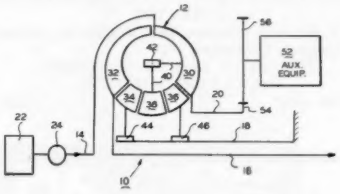
1. A combustion engine, comprising, in combination:
a. a housing forming an enclosed, resonance chamber having a pair of adjacent end portions;
b. a port provided in one of the housing end portions for permitting a fluid to pass into the chamber;
c. valve means associated with the port for closing same during intermittent combustions occurring in the chamber;
d. a further port arranged at the other of the housing end portions and being also provided with an associated further valve means for admitting air into the resonance chamber when a condition of low pressure is present in a portion of the chamber adjacent the further valve means;
e. deflection means provided on the housing and arranged between the chamber end portions for deflecting fluid passing between the chamber end portions; and
f. exit means provided on the housing and arranged between the chamber end portions for permitting combustion gases to exit the chamber.

3,848,409

TRANSMISSION SYSTEM

Miczyslaw J. Waclawek, Mishawaka, Ind., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Oct. 9, 1973, Ser. No. 404,558
Int. Cl. F16h *47/06*
U.S. Cl. 60—345 **21 Claims**



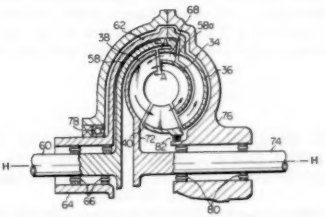
1. A high ratio hydrodynamic torque converter comprising:
a. an impeller;
b. at least one turbine;
c. at least one reactor;
d. an auxiliary element preceding said impeller;
e. input means connected to said impeller;
f. an output shaft connected to said at least one turbine;
g. a stationary support connected to said reactor;
h. said auxiliary element being connected to one of said output shaft and said stationary support; and
i. a torque regenerative element located in said torque converter between said at least one reactor and said auxiliary element, said torque regenerative element being drivingly connected to said impeller, with said torque regenerative element absorbing a maximum torque when said torque converter is stalled and diminishing as said torque converter increases in speed ratio.

3,848,410

HYDRAULIC TORQUE CONVERTER AND POWER SYSTEM INCORPORATING SAME

Keijiro Kinoshita, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed Apr. 24, 1973, Ser. No. 354,108
Claims priority, application Japan, Apr. 25, 1972, 47-41670; May 1, 1972, 47-43537
Int. Cl. F16h *41/00*
U.S. Cl. 60—347 **11 Claims**



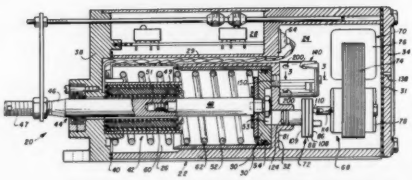
1. A hydraulic torque converter comprising at least two pumps respectively connected to separate driving members and rotatable about a common axis for producing a combined hydrodynamic power from rotational powers imparted thereto from said driving members, said pumps being located radially adjacent to each other about said axis, the pump positioned radially inwardly of the other being connected through a curved arm and a plurality of struts which are spaced apart from each other around the radially inwardly positioned pump

for providing passageways between the other pump and a turbine, the turbine is rotatable about said axis responsive to said hydrodynamic power from said pumps and is drivingly connected to a driven member, and a stator positioned between said turbine and at least one of said pumps.

3,848,411
CONTROL CIRCUIT FOR AN ELECTROMECHANICAL ACTUATOR

Charles F. Strawn, Arlington, Tex., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 26, 1973, Ser. No. 326,854
Int. Cl. F15b *11/12, 15/18*
U.S. Cl. 60—432 **12 Claims**



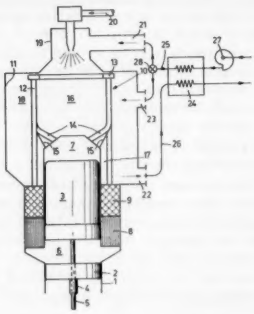
1. In a control system including an actuator means having an actuator shaft movable between at least first and second positions, shaft positioning means including drive means and hold means for positioning said shaft at any one of a plurality of positions including said first and second positions and positions intermediate said first and second positions, and position sensing means for providing a sense signal indicating the position of said shaft, a control circuit responsive to said sense signal and a command signal indicating a desired position for said shaft for effecting energization of said drive means and said hold means for positioning said shaft, said control circuit comprising first switching means operable when enabled to provide an energizing signal for said drive means, second switching means operable when enabled to provide an energizing signal for said hold means, said first and second switching means being enabled concurrently whenever the difference between said command and sense signals exceeds a first predetermined amount to permit said shaft to be driven from a given position toward said second position, and to be maintained at any one of said discrete positions intermediate said given position and said second position, said second switching means being enabled independently of said first switching means whenever the difference between said command and sense signals exceeds a second predetermined amount to permit said shaft to be moved from a given position toward said first position and to be maintained at any one of the positions intermediate said given position and said first position.

3,848,412
METHOD OF SUPPLYING THERMAL ENERGY TO THE HEATER OF A HOT-GAS ENGINE, AS WELL AS A HOT-AS ENGINE COMPRISING A DEVICE FOR CARRYING OUT THE METHOD

Albertus Peter Johannes Michels; Henricus Cornelis Johannes Van Beukering; Herman Fokker, and Roelf Jan Meijer, all of Emmansingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 334,869, Feb. 22, 1973. This application Apr. 8, 1974, Ser. No. 458,550
Claims priority, application Netherlands, Mar. 6, 1970, 03200
Int. Cl. F02g *1/04*
U.S. Cl. 60—517 **9 Claims**

1. In a hot gas engine including a housing, a burner for combustion of air and fuel producing combustion gases and a heater comprising a plurality of ducts for exchange of heat from said combustion gases to fluid medium flowing in said ducts, the improvement in combination therewith wherein said heater ducts are situated within said housing and define a first annular space surrounded by the ducts, a second annular space surrounding the ducts, and a third space axially adjacent said ducts, said first and third spaces comprising a primary combustion space, said second space comprising a secondary combustion space including a discharge outlet, said apparatus further comprising means for supplying to said primary combustion space fuel and a quantity of air which is stoichiometrically insufficient for complete combustion of the

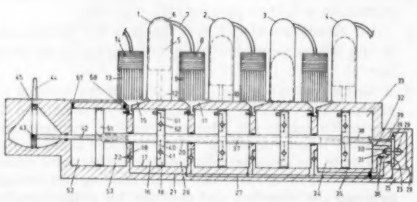


supplied fuel resulting in combustion at a temperature lower than the temperature of stoichiometric combustion, the apparatus further comprising secondary means for supplying air to said secondary combustion space for reaction with combustion gases that flow there from the primary combustion space, said heater ducts absorbing heat from and reducing the temperature of said combustion gas which flows past the ducts from the primary to secondary combustion spaces, said heat removal in combination with non-stoichiometric combustion ensuring that the temperature of said combustion gases remain below the corresponding stoichiometric temperature such that formation of nitrogen oxides is inhibited.

3,848,413
HOT GAS ENGINE POWER CONTROL DEVICE

Yngve Roland Gothberg, Malmo, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed Aug. 22, 1973, Ser. No. 390,518
Claims priority, application Sweden, Sept. 26, 1972, 44384/72
Int. Cl. F02g *1/04, 1/06*
U.S. Cl. 60—525 **6 Claims**



1. A multiple-cylinder hot gas engine power control device comprising in combination, a plurality of pistons each having

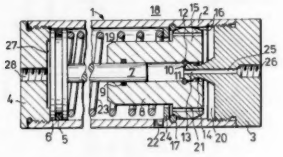
a low temperature working chamber for receiving gas, a dead volume chamber coupled to each said working chamber, a movable wall in each of said chambers for changing the chamber volume, and means coupling said movable walls together for common movement to control the engine power.

3,848,414

PRESSURE CONVERTER

John Roland Larsson, Atvidaberg, Sweden, assignor to Aktiebolaget Assa, Atvidaberg, Sweden

Filed Feb. 14, 1973, Ser. No. 332,315
Claims priority, application Sweden, Feb. 29, 1972, 2530/72
Int. Cl. F15b *7/00*
U.S. Cl. 60—593 **9 Claims**



1. A pressure converter comprising

an outer housing having an inner cylindrical surface defining a cylindrical cavity through said housing, said inner surface having two ends,

first and second end pieces at each end of said inner surface, said end pieces closing the cavity in said housing, said end pieces each having a fluid union therein,

a first piston disposed in the cavity in said housing toward said first end piece and abutting said inner surface of said housing,

a tubular member disposed in the cavity in said housing toward said second end piece and having an inner cylindrical surface therein defining a cylindrical cavity through said tubular member,

a second smaller piston disposed in the cavity in said tubular member and abutting said inner surface of said tubular member, said second piston being rigidly connected to said first piston, and

a spigot having a rounded outer surface extending from said second end piece into the cavity in said tubular member, and having a fluid connection therein between said cavity and said union is said second end piece, said spigot abutting the inner surface of said tubular member such that it forms the tilting axis of said tubular member which is tiltable relative to said second end piece and said outer housing.

3,848,415

RESONANT GAS-EXPANSION ENGINE WITH HYDRAULIC ENERGY CONVERSION

Mihai C. Demetrescu, 17761 Palmento Way, Irvine, Calif. 92664

Filed Dec. 11, 1972, Ser. No. 314,211
Int. Cl. F2b *71/04*
U.S. Cl. 60—595 **9 Claims**

1. A resonant, combustion -gas- expansion, fluid pressurizing motive system comprising:

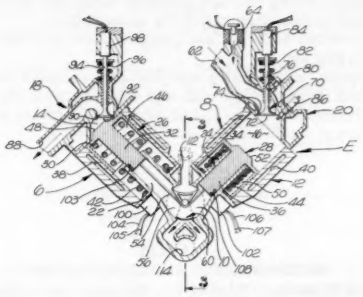
block means defining at least one pair of combustion -gas-expansion working chambers, and at least one pair of hydraulic working chambers, each of said hydraulic working chambers being coaxial with one of said combustion -gas- expansion working chambers;

at least one pair of compound piston means, each piston means being intermediate one of said combustion -gas-expansion working chambers and one of said hydraulic working chambers;

spring means interposed between said piston means and said block means,

said spring means, said piston means and a hydraulic fluid defining a spring-mass system;

hydraulic inlet and outlet means coupled to said hydraulic working chambers;



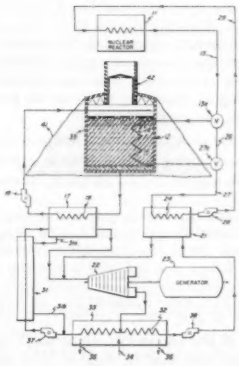
control means responsive to said spring-mass system including means for supplying and igniting a gas for driving said spring mass system at its frequency of mechanical resonance.

3,848,416

POWER GENERATING PLANT WITH NUCLEAR REACTOR/HEAT STORAGE SYSTEM COMBINATION

Francis P. Bundy, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 23, 1973, Ser. No. 363,139
Int. Cl. F01k *23/00, 23/10*
U.S. Cl. 60—676 **20 Claims**



1. In a power plant for generating electricity in which a source of high temperature fluid under pressure is in flow communication with a steam boiler in which heat from said high temperature fluid is used to generate steam for operation of the steam turbine used to drive a generator, the improvement in combination with the source of high temperature fluid and the steam boiler comprising:

a. a heat storage enclosure containing a mass of a salt material having a melting point of about, and less than, the temperature of the high temperature fluid,

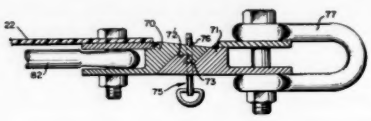
b. heat exchange means located in said enclosure in contact with said mass,
c. means connected to said heat exchange means for selectively placing said heat exchange means into and out of flow communication with the source of high temperature fluid,
d. means connected to said heat exchange means for selectively placing said heat exchange means into and out of flow communication with the steam boiler,
e. a second boiler in flow communication with the steam turbine and
f. means for circulating said fluid heat exchange material into direct contact with said mass for receiving heat therefrom and then to said second boiler for the generation of steam with the heat carried thereby.

3,848,417

SELF-RIGHTING FLOATING BOOMS

Millard F. Smith, 2 Harding Ln., Westport, and Anthony V. Anusauckas, Fairfield, both of Conn., assignors to said Smith by said Anusauckas

Division of Ser. No. 164,606, July 21, 1971, Pat. No. 3,756,031, which is a continuation-in-part of Ser. No. 815,663, April 14, 1969, Pat. No. 3,638,430. This application May 17, 1973, Ser. No. 361,335
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **4 Claims**



1. A tension-transmitting connector for the end of the flat vertically arrayed fin of an elongated floating material containment boom, for joining said end thereof to a tension-applying towing or anchoring rig or to the juxtaposed end of a similar boom, comprising:
A. a vertically elongated towed flange secured to said flat fin end and having a distal portion exposed for engagement with a substantially identical, mirror image towing flange;
B. means forming a raked, tension-carrying joint interlocking said towed flange to said towing flange including:
1. a raked distal jaw protruding proximally from said towed flange in a first lateral direction,
2. a corresponding opposite raked distal jaw protruding from said towing flange in the opposite lateral direction,
3. a proximal raked groove immediately adjacent to each jaw with one wall formed by said adjacent jaw and positioned to receive the interengaging jaw,
4. and locking means secured to the distal portions of said flanges for releasably securing said oppositely protruding raked distal jaws in barbed scarph interengagement and positioned to block lateral separation of each jaw from its interengaging groove and cooperate with said groove to block overlapping sliding movement of said flanges,

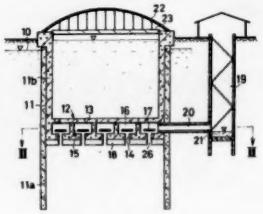
whereby tension loads are readily transmitted from one elongated boom segment to the next and to terminal towing rigs while the containment integrity of the booms is not significantly reduced.

3,848,418

UNDERGROUND STORAGE TANK FOR LOW TEMPERATURE LIQUEFIED GAS

Kunio Takase, Ohmiya; Hisashi Miyakoshi, and Mitsuo Ohmura, both of Nishinomiya, all of Japan, assignors to Osaka Gas Co., Ltd., Osaka-shi, Osaka and Ohbayashi-Gumi, Ltd., Osaka, both of, Japan

Filed Apr. 12, 1973, Ser. No. 350,410
Claims priority, application Japan, Apr. 24, 1972, 47-41092; July 8, 1972, 47-68340
Int. Cl. F17c *1/12*; **B65g** *5/00*
U.S. Cl. 61—.5 **6 Claims**



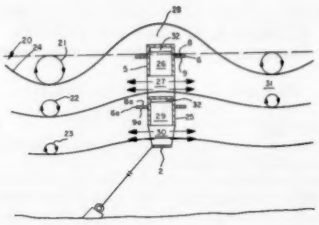
1. An underground storage tank for a low temperature liquefied gas comprising a top closure cover outside of ground, a concrete annular side wall deeply extending in the ground, a concrete floor slab provided at a level lower than a ground-water level, and an insulation for keeping, at least, the upper portion of said tank to a low temperature, wherein said floor slab comprises an upper floor slab section, a lower floor slab section placed upon the excavated bottom of the soil, and a plurality of supporting members interposed between said upper and lower floor slab sections, said annular side wall extending to said lower floor slab section in contact therewith and forming an adiabatic space free from the soil inside of said side wall between said upper and lower floor slab sections and said supporting members.

3,848,419

FLOATING WAVE BARRIER

Wallace William Bowley, Stafford Springs, Conn., assignor to William B. Ritchie, Jr., Duxbury, Mass., a part interest

Continuation-in-part of Ser. No. 357,938, March 7, 1973, which is a continuation-in-part of Ser. No. 267,086, June 28, 1972, abandoned. This application July 27, 1973, Ser. No. 383,346
Int. Cl. E02b *3/04*
U.S. Cl. 61—5 **9 Claims**



1. A wave barrier comprising a plurality of buoyant members, at least one of said members comprising a vessel having a closed top, an open bottom and at least one annulus secured

to the exterior of the vessel, the remainder of said members being a disk or one of said vessels having at least one annulus attached to the exterior of the vessel, said members being flexibly suspended to each other and, when anchored in water having a configuration such that the members are located at different vertical levels along a common vertical axis and each vessel has its bottom at a lower water level than its top, each of said disks being of relatively great horizontal extent compared to its vertical dimention, the mass and buoyancy of said members and the distance between said members being such as to provide vertical, out of phase motion of said members to exert a compression force on water between said members to reduce a vertical wave velocity component and increase a horizontal wave velocity component in both a landward and seaward direction without substantial contact of said members.

3,848,420

MINE ROOF SUPPORTS

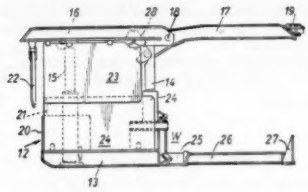
Archelaius Dawson Allen, Preston, and Fred Small, Lathom, both of England, assignors to Gullick Dobson Limited, Ince, Wigan, England

Filed Mar. 16, 1973, Ser. No. 342,304

Claims priority, application Great Britain, Mar. 24, 1972, 13972/72

Int. Cl. E21d *15/44, 23/00*

U.S. Cl. 61—45 D **3 Claims**



1. A mine roof support comprising a base structure, hydraulic prop means including foremost and rearmost props mounted on said base structure, said base structure being extended forwardly of all said prop means to provide a walkway for miners, a roof-engaging canopy mounted on said prop means for application thereby to a roof to be supported, a cantilever roof-engaging member pivotally attached to and projecting forwardly from said canopy and over said walkway, a lower side-shield plate extending up from and secured to the base structure along the side thereof and closing the space between said foremost and rearmost props for a part of the height thereof, an upper side-shield plate hingedly attached to said canopy along the side thereof and depending therefrom and overlapping said lower side shield plate for substantially the full length thereof so as to close the remaining space between said foremost and rearmost props, an extensible shield closing the support at the rear of all said prop means, whereby the flushing of mineral into the support at the sides and rear thereof is prevented, and a pressure-fluid ram means acting between said canopy and said cantilever roof-engaging member to apply the latter to a roof to be supported whereby said walkway is clear of obstruction by prop means, mounted on said base structure, for supporting said cantilever roof-engaging member.

3,848,421

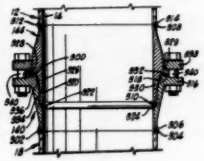
RISER SECTION APPARATUS

Billy L. O'Brien, 1400 Pine St., and Heber P. O'Brien, 730 E. 14th St., both of Ada, Okla. 74820

Continuation-in-part of Ser. No. 121,788, March 8, 1971. This application Dec. 6, 1972, Ser. No. 312,572

Int. Cl. F16l *35/00;* **B23q** *1/08*

U.S. Cl. 61—72.3 **8 Claims**



1. A riser section constructed to be interconnected to other riser sections to form a riser, each riser section being supportable in one position via a riser support assembly as another riser section is positioned in an interconnecting position therewith and secured thereto, the connected riser sections being subsequently lowerable into an interconnecting position with an underwater pipeline, each riser section comprising:

a pipe section, having a connecting upper end and a connecting lower end, the connecting upper end of the pipe section being connectable with the connecting lower end of another pipe section for interconnection of the pipe section to another pipe section; and

a support ring secured about a portion of the outer periphery of the pipe section spaced a distance from the upper end thereof and extending generally radially therefrom forming an upper surface and a lower surface, the support ring positioned on the pipe section and sized to be engageable with a portion of the riser support assembly for securedly supporting the pipe section, and the connecting upper end of the supported pipe section being connectable to the connecting lower end of another pipe section in the supported position of the pipe section and in a connected position of the pipe section to another pipe section, the support ring being spaced from the connected portions of the pipe section and the other pipe section connected thereto.

3,848,422

REFRIGERATION PLANTS

Lauritz Benedictus Schibbye, Saltsjo-Duvnas, Sweden, assignor to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Continuation-in-part of Ser. No. 352,731, April 19, 1973, abandoned. This application Jan. 23, 1974, Ser. No. 435,767

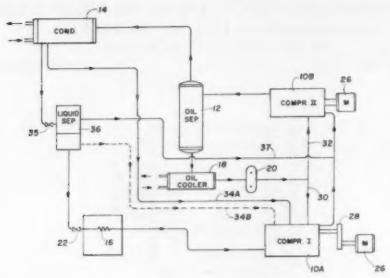
Claims priority, application Great Britain, Apr. 24, 1973, 19655/73

Int. Cl. F25b *1/10*

U.S. Cl. 62—84 **7 Claims**

1. A method of operating a refrigeration plant including a condenser, an evaporator, a first compressor means forming a low pressure stage and a second compressor means forming a high pressure stage each said compressor means being of the meshing screw rotor type having a first rotor driven by a prime mover and a second rotor driven by direct contact between its lands and the lands of the first rotor, comprising the steps of driving the first compressor means with a speed such that the peripheral velocity of its male rotor is higher than that of the

male rotor of the second compressor means and supplying lubricating oil to the first compressor means in an amount at least not considerably exceeding what is necessary to satisfactorily lubricate the relatively movable contact surfaces.

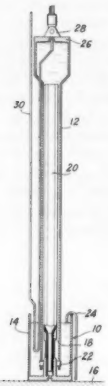


3,848,423

HANDLING SYSTEM FOR NUCLEAR FUEL ASSEMBLIES

Charley Renaux, Jouques, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Feb. 9, 1972, Ser. No. 224,813
Claims priority, application France, Feb. 9, 1971, 71.04263
Int. Cl. F17c *7/00*
U.S. Cl. 62—45 **4 Claims**



1. A nuclear fuel assembly handling system for dissipating residual thermal power of the fuel, comprising a support, a trough on said support open at the top, a bell having an open bottom part, means on said open bottom part cooperating with said support to lock said bell to said support with the lower edge of said bell below the opening of said trough, a U-tube for said bell opening into the top closed part of said bell and to the exterior and discharging at a level at least equal to the opening of said U-tube into the bell.

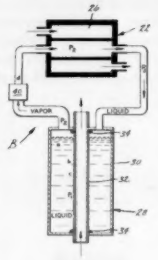
3,848,424

REFRIGERATION SYSTEM AND PROCESS

Lyle G. Rhea, Rt. 1, Box L-189, Rolla, Mo. 65401

Filed Sept. 22, 1972, Ser. No. 291,348
Int. Cl. F25b *1/00*
U.S. Cl. 62—115 **18 Claims**

1. A heat extraction system comprising: a container, the interior of which is isolated from the surrounding atmosphere; a refrigerant in the container, some of the refrigerant in the container being in the liquid phase and some being in the vapor phase; rotating means disposed within the container and extended into the liquid therein for causing the temperature at the exterior surface of the rotating means to drop below the temperature of the bulk of the liquid refrigerant when rotated about a substantially upright axis, the configuration of the rotating means being such that when the rotating means is rotated at sufficient speed a reduction in pressure and temperature occurs in the refrigerant along the surface of the rotating means while the pressure of the great bulk of the liquid refrigerant remains unchanged; and means for revolving the rotating means at a speed great enough to cause said reduction in pressure and temperature along the surface thereof.

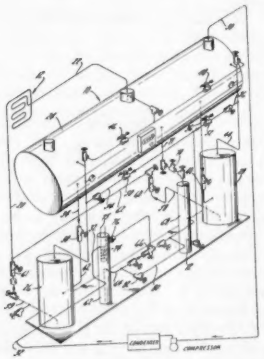


3,848,425

LOW PRESSURE REFRIGERATION SYSTEM

John E. Watkins, Maywood, Ill., assignor to Successor Corporation, Maywood, Ill.

Filed Dec. 4, 1972, Ser. No. 311,772
Int. Cl. F25b *41/00*
U.S. Cl. 62—174 **3 Claims**



1. In a refrigeration system having an evaporator and operative to overfeed the evaporator with liquid refrigerant in excess of that evaporated, a compressor, a suction line connecting the return side of said evaporator with the suction inlet of said compressor, an accumulator tank interposed in said suction line operative to collect liquid refrigerant overfeed passing through the evaporator while permitting gaseous refrigerant to return to the compressor, a condenser connected to the outlet of said compressor operative to cool and liquify com-

pressed refrigerant gas received from the compressor, and a system connected to the accumulator and the evaporator for recirculating the liquid refrigerant overfeed collected in the accumulator including a pair of pumper drums connected to said accumulator tank for alternately receiving liquid refrigerant therefrom by gravity, and means supplied from the outlet of the compressor for alternately pressurizing said pumper drums for pumping the liquid refrigerant therein to the evaporator, the improvement comprising:

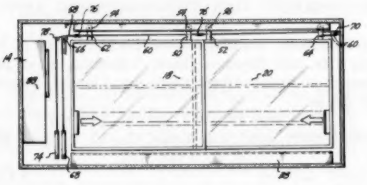
means including a pressure reducing connection and a pressure control valve connected to receive and operative to reduce the pressure of all of said refrigerant from the condenser to a predetermined pressure to provide a stream of primary make-up pressurized refrigerant, and further including means for carrying all of said stream of primary make-up pressurized refrigerant to said pumper drums, combining said stream with overfeed liquid refrigerant in said pumper drums and utilizing said stream for alternately pressurizing said pumper drums for feeding refrigerant to said evaporator.

3,848,426

AIR CIRCULATION SYSTEM FOR A REFRIGERATOR DISPLAY CASE

Robert W. Whitney, 1235 Second Ave. North, Seattle, Wash. 98109

Filed Aug. 31, 1973, Ser. No. 393,414
Int. Cl. A47f *3/04*
U.S. Cl. 62—255 **7 Claims**



1. In a refrigerator display case of the type including a cabinet, a cooling coil and blower end mounted within said cabinet, vertically spaced food supporting shelves mounted within said cabinet and laterally sliding doors on said cabinet providing access to the food on said shelves, the improvement comprising a cool air circulation system including:

duct means directing cool air from said end mounted cooling coil and blower along the bottom of said cabinet, said duct means including a top plate means having a plurality of holes therein through which said cool air moves upwardly into said cabinet;

longitudinal channel means positioned within said duct means and beneath said top plate means to selectively close said holes therein to control the distribution of cool air to said cabinet; and

damper means controlling the return flow of air to said end mounted cooling coil, said damper means being mechanically linked to said sliding doors and closable in response to the opening of said doors.

3,848,427

STORAGE OF GAS IN UNDERGROUND EXCAVATION

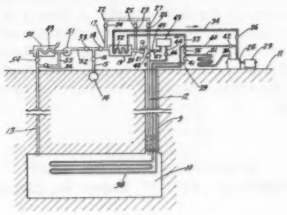
Robert L. Loofbourow, 4032 Queen Ave. South, Minneapolis, Minn. 55410

Filed Mar. 1, 1971, Ser. No. 119,623
Int. Cl. F25d *23/12*
U.S. Cl. 62—260 **7 Claims**

1. A method of storage of pipeline gas received as compressed gas from a pipeline at pressures between about 700 to 1,200 psi and temperatures between about 40° to 80° F in an excavated underground storage facility including at least one excavated underground rock chamber, which method comprises:

A. cooling said gas to about −50° to −150°F and charging to said storage facility at pipeline pressures,

B. when said facility contains about one half of its maximum capacity, increasing the pressure and maintaining at moderately elevated level up to about 2,500 psi,



C. maintaining the facility at reduced temperature between about −50° and −150° F, whereby the gas is maintained for storage predominantly in the gaseous state and is densified to store between about 75 and 475 cubic feet of gas to each cubic foot of storage space,

D. circulating stored gas to heat exchangers at ground surface to cool the gas to maintain the storage temperature,

E. discharging said stored gas upon demand, and

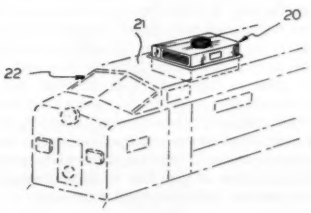
F. after the quantity of stored gas has been reduced to about one half of its maximum, decreasing the pressure while maintaining the temperature between about +50° and −150° F.

3,848,428

AIR CONDITIONING SYSTEM FOR A LOCOMOTIVE CAB

James F. Rieter, Jr., Glenview, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed May 21, 1973, Ser. No. 362,435
Int. Cl. F25d *21/14*
U.S. Cl. 62—285 **5 Claims**



1. An air conditioning system for a locomotive cab to be mounted in the roof of the locomotive cab, said system comprising a frame including a centrally and horizontally arranged panel, upper and lower covers on the top and bottom sides of the panel defining upper and lower chambers, the upper chamber being generally positioned above the roof and exposed to the atmosphere, the lower chamber being generally positioned below the roof and within the cab, a pair of heat exchanger condensing units in the upper chamber one at each the front and back ends thereof and extending vertically and perpendicular to the longitudinal axis of and the path of move-

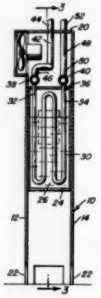
ment of the locomotive, means connecting said condenser units in parallel, a compressor unit in the upper chamber along one side thereof, air inlet openings in the upper cover at the front and back walls aligning with the condenser units, an air discharge opening in the upper cover, a fan in the upper chamber between the spaced condenser units arranged to draw air into the chamber through the condenser units and expel air through the air discharge opening, a heat exchanger evaporator unit in the lower chamber, an air inlet opening in the lower cover for the lower chamber aligned with said evaporator unit to allow air to move from the cab through the evaporator unit and into the lower chamber, air discharge opening means in the lower cover, a blower in the lower chamber including a housing having an inlet communicating with the lower chamber and outlet means communicating with the air discharge opening means to pull air through the evaporator unit and expel it through the discharge opening means into the cab.

3,848,429

HOLDOVER COOLING UNIT

Paul R. Franklin, Jr., 5211 W. Beaver St., Jacksonville, Fla. 32205

Filed Nov. 10, 1972, Ser. No. 305,242
Int. Cl. F25d *11/04*
U.S. Cl. 62—439 **5 Claims**



1. In combination with a source of liquid nitrogen under pressure, a housing including air inlet and air outlet openings and blower means operatively associated with the housing for pumping air through the housing and out the air outlet opening, at least one closed tank disposed within the housing for the passage of air being pumped through the housing in heat transfer relation with the outer surfaces of the tank, a quantity of eutectic solution disposed within the tank, and a coil of good heat transmitting material disposed within the tank and including inlet and outlet ends opening outwardly of the tank, fluid flow controlled means communicating the inlet end of the coil with said source of liquid nitrogen under pressure, said outlet end being free of gas flow restricting means for free venting of vaporized liquid nitrogen therefrom.

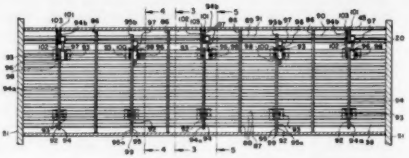
3,848,430

ABSORPTION REFRIGERATION MACHINE WITH SECOND STAGE GENERATOR

James M. Porter; Carl V. Loweth, both of La Crosse, and Kenneth W. Gilster, Onalaska, all of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Sept. 13, 1973, Ser. No. 397,090
Int. Cl. F25b *15/06*
U.S. Cl. 62—476 **11 Claims**

1. In a two stage absorption refrigeration machine wherein the second stage generator is heated by water vapor generated in the first stage generator and water condensate formed in the first stage generator from heating steam supplied through a steam control valve, a second stage generator comprising: a shell defining an enclosure; first conduit means for passing an absorption solution from said first stage generator into said enclosure; a first elongated tube bundle extending through said enclosure; a second elongated tube bundle extending through said enclosure; second conduit means for passing water vapor that is generated in said first stage generator through the tubes of said first tube bundle; third conduit



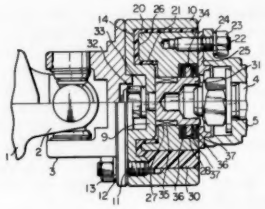
means for passing steam condensate that is formed in said first stage generator through the tubes of said second tube bundle; each of said tube bundles being fixedly supported at their ends by said shell; and means intermediate the ends of said second tube bundle to accommodate longitudinal expansion of the tubes of said second tube bundle relative to the tubes of said first tube bundle during idle and start up conditions of said refrigeration machine.

3,848,431

AUTOMOTIVE VIBRATION ABSORBING JOINT ASSEMBLY

Koichi Takahashi; Keizaburo Usui; Eiichi Abe, all of Yokohama City, and Kiyotaka Ozaki, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed May 10, 1973, Ser. No. 358,924
Claims priority, application Japan, May 17, 1972, 47-48948
Int. Cl. F16d *3/14*
U.S. Cl. 64—27 NM **5 Claims**



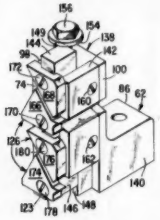
1. In a final drive line of a motor vehicle, the improvement comprising, in combination, a propeller shaft and a final pinion drive shaft, a universal joint attached to the rear end of said propeller shaft and having a yoke portion, a flange attached to the front end of said final pinion drive shaft, and an additional joint including an annular member secured to said yoke portion of said universal joint, an intermediate member received in said annular member and secured to said flange of said final pinion drive shaft, said intermediate member being spaced axially and radially apart from said annular member, a resilient member filling a space formed between said annular member and said intermediate member and drivably connecting said annular member and said intermediate member, said intermediate member having an axial bore formed therethrough, a cylindrical member extending through said axial bore and secured at its front end to said annular member, a

needle bearing carried on said cylindrical member for maintaining the rotary axis of said cylindrical member in alignment with the rotary axis of said intermediate member, a radial flange formed on said cylindrical member and a pair of thrust bearings mounted on both sides respectively of said radial flange on said cylindrical member for thereby carrying an axial thrust force applied to said annular member and said intermediate member in either direction.

3,848,432
CAM SECTION BLOCKS FOR CIRCULAR KNITTING MACHINES

Lester Mishcon, Miami Beach, and Donald W. Reagan, Hialeah, both of Fla., assignors to The Singer Company, New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,831
Int. Cl. D04b *15/32*
U.S. Cl. 66—54 **1 Claim**

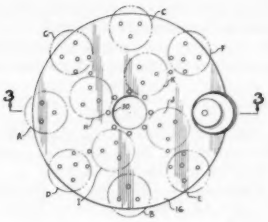


1. In a multi-feed circular knitting machine, the combination comprising a plurality of cam-section blocks; the blocks being L-shaped with a front upright portion and rear-wardly extending foot portion, and each block having parallel planar opposite side surfaces, defining a leading a trailing side in relation to the direction of needle movement, parallel planar opposite end surfaces, and parallel planar top and bottom surfaces generally defining the L-shaped outline of the block; means for mounting needle actuating cams for one feed only on the front upright portion of each block; a ring for supporting said cam-section blocks around a circular arc concentric with the cylinder of the machine, with the cams facing the center of the arc, and with adjacent side surfaces of the cam-section blocks extending in diverging direction outwardly from said center; and a fastener at the foot portion of each block for securing the foot portions of the blocks to the ring; the front of each block including a portion which mates with a notch on a portion of the ring to positively fix, in conjunction with the fastener at the foot, the positions of the blocks on the ring; the means for mounting the cams for each block on the front portion of the block including a vertically adjustable rectangularly shaped elongated member having a front surface to which the cams are affixed and a rear surface which engages a front surface on the upright portion of the block, the elongated member and an integral portion of the leading side of the block including a slot in one such part and a projecting portion on the other extending into the slot, such slot and projecting portion permitting vertical movement of the elongated member in the block and preventing horizontal movement of the member away from said engaged front surface on the upright portion of the block, the means for mounting the cams for each block on the front portion of the block also including removable plate means on the trailing side of the block in engagement with one side of the elongated member, such removable plate means being the only restraint against movement of the elongated member in the direction of needle movement, the opposite side of the elongated member being in engagement with an integral part of the block.

3,848,433
BOBBIN MOUNTING DISC

John Greczin, 7312 School Ln., Melrose Park, Philadelphia, Pa. 19126

Filed Aug. 25, 1972, Ser. No. 283,787
Int. Cl. D04b *15/48*
U.S. Cl. 66—125 R **3 Claims**



1. In combination with a multi-feed circular knitting machine,

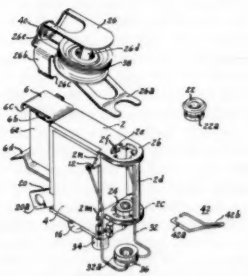
A. a bobbin mounting disc concentrically positioned on the knitting machine,
   1. said disc having rotary movement relative to the knitting machine,
   2. said disc being drilled to provide a plurality of randomly positioned mounting holes,
   3. said disc acting as a shield during rotation to prevent upward passage of any air currents that may be generated beneath the disc by the rotary movement; and

B. a plurality of mounting blocks secured to the disc at the said mounting holes,
   1. each said mounting block carrying bobbin support means to accommodate a yarn-wound bobbin,
   2. said mounting blocks being capable of being secured to the disc in a variety of randomly located positions.

3,848,434
YARN DETECTOR SWITCH-LOWER

Alton W. Hopkins, Newtown Square, Pa., assignor to Control Switch, Inc., Folcroft, Pa.

Filed Mar. 5, 1973, Ser. No. 337,925
Int. Cl. D04b *35/14*
U.S. Cl. 66—163 **9 Claims**



1. A yarn detector device for a knitting machine comprising:

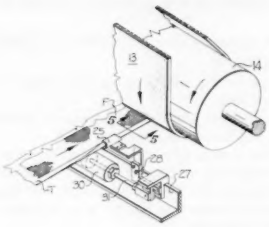
an insulating housing;

a pair of electrical terminals on said housing;

a toggle spring mechanism comprising an overcenter spring biased crank shaft in said housing with the opposite ends of said crank shaft extending out through opposite walls of said housing;

an electric circuit within said housing extending between said terminals;
contacts within said housing responsive to operation of said crank shaft for closing said electric circuit;
and external thread passage means through which the thread passes before entering the knitting machine comprising:
thread guiding means and means mounting the same on said housing;
a trip lever for detecting a break or end of thread to operate said crank shaft to close said contacts;
and quick disconnect joint means between said trip lever and said crank shaft enabling ready replacement thereof.

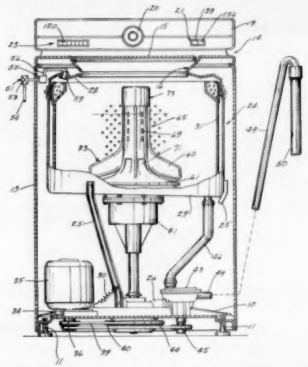
3,848,435
TRANSFER PRINTING MACHINE
Edwin B. Armstrong, Jr., Burlington, N.C., assignor to Alamance Industries, Inc., Burlington, N.C.
Filed July 23, 1973, Ser. No. 381,630
Int. Cl. D06p *7/00;* **B41m** *5/26*
U.S. Cl. 68—5 D **6 Claims**



1. In a transfer printing machine adapted to continuously transfer printed heat-transferable indicia from the face side of lengths of transfer paper of a given width to the face side of lengths of fabric of a lesser width, said machine including a transfer paper supply, a fabric supply, a heated transfer roll, an endless blanket supported for engagement with at least a portion of the peripheral surface of said transfer roll, fabric take-up means, a transfer paper take-up means, and drive means for rotating said transfer roll and said endless blanket and continuously moving the fabric from the respective supplies to the respective take-up means and between said transfer roll and said endless blanket with the face side of the fabric and the indicia bearing side of the transfer paper in facing relationship so that the heat transferable indicia is transferred from the paper to the fabric as they pass between said endless blanket and said transfer roll, the combination therewith of means for preventing the transfer to the endless blanket of indicia from the portions of the paper normally extending outwardly beyond the width of the fabric, said means comprising folding means positioned at opposite edges of the transfer paper and in advance of said transfer roll for folding the outer edges of the transfer paper inwardly a sufficient distance that the heat transferable indicia along the outer edges will not be transferred to said endless blanket.

3,848,436
PRECLEANING A LAUNDRY WASHING MACHINE
Quintin N. Rottering, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed Feb. 23, 1973, Ser. No. 335,251
Int. Cl. D06f *33/02*
U.S. Cl. 68—12 R **7 Claims**

1. In a laundry apparatus, the combination comprising: a container for receiving and containing washing fluid, a basket disposed within said container for receiving fabrics to be washed and centrifugally rotatable for removing fluids from said fabrics; means for washing fabrics in said basket; pump means communicating with said container and operable for pumping vitiated washing fluid from said container; pump drive means energizable for operating said pump means; conduit means effectively connected to said container and communicating with said pump means for conducting said vitiated fluid from said container toward an external drain; fluid supply means for directing water into said apparatus; a sequence control circuit for programming said apparatus through a plurality of operations including an optional preliminary apparatus flushing operation and other operations selectable as a group to comprise a primary cycle of operations; and control means including preselection means for selecting a primary

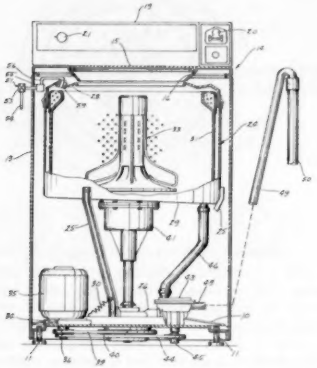


cycle of operations and for optionally selecting said flushing operation, said control means being operable in cooperation with said sequence control circuit for initiating said flushing operation including energizing said fluid supply means and said pump drive means to effect flow of water into said apparatus and through said pump means and said conduit means toward said external drain and being further operable for initiating said primary cycle of operations at completion of said flushing operation, said sequence control circuit being cooperable with said control means responsive to selection of said primary cycle of operations and nonselection of said flushing operation for initiating said selected primary cycle of operations.

3,848,437
PRECLEANING A TOKEN-ACTUATED LAUNDRY WASHING MACHINE
Quintin N. Rottering, Newton, Iowa, assignor to The Maytag Company, Newtown, Iowa
Filed Feb. 23, 1973, Ser. No. 335,252
Int. Cl. D06f *33/02*
U.S. Cl. 68—12 R **9 Claims**

1. In a token-actuated laundry apparatus, the combination comprising: container means for receiving and containing washing fluid and fabrics to be washed therein; means for washing fabrics in said container means; pump means communicating with said container means and operable for pumping vitiated washing fluid therefrom; pump drive means energizable for operating said pump means; conduit means effectively connected to said container means and communicating with said pump means for conducting said vitiated fluid from said container means; fluid supply means for directing water into said container means; a sequence control circuit for programming said apparatus through a plurality of operations including an optional preliminary apparatus flushing operation and

other operations selectable as a group to comprise a primary cycle of operations excluding said flushing operation; energizing circuit means including token-actuated circuit means responsive to receipt of a proper token and further including cycle selection means responsive to selection of a desired primary cycle of operations, said energizing circuit means being operable for energizing said sequence control circuit to initiate operation of said apparatus through said primary cycle of operations upon actuation of both of said token-actuated circuit means and said cycle selection means; optional flushing circuit means selectively actuatable by selection of said flush-



ing operation after actuation of said token-actuated circuit means and prior to actuation of said cycle selection means for energizing said sequence control circuit to initate operation of said fluid supply means and said pump drive means to effect flow of water into said container means and through said pump means and said conduit means to flush said container means, said pump means, and said conduit means prior to initiation of said primary cycle of operations; and holding circuit means responsive to completion of said flushing operation for maintaining said laundry apparatus conditioned for selection and initiation of said primary cycle of operations.

3,848,438

APPARATUS FOR SUCCESSIVELY PROCESSING CONTINUOUSLY CONNECTED TEXTILE FABRIC

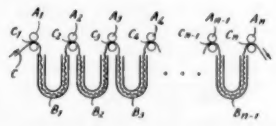
Yoshishige Tachibana, Akashi, and Yoshihiro Morikuni, Osaka, both of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka-fu, Japan

Filed Oct. 26, 1973, Ser. No. 410,117

Claims priority, application Japan, Oct. 28, 1972, 47-108156

Int. Cl. B05c *3/152, 3/178, 11/124*

U.S. Cl. 68—22 R **20 Claims**



1. An apparatus for successively processing a continuous textile fabric having detectable portions at predetermined intervals, comprising

means defining a feeding path for feeding along the length of the path said continuous textile fabric,

a plurality of detecting means disposed in successively displaced portions along said feeding path for detecting corresponding ones of said detectable portions of said continuous textile fabric,

said feeding path defining means including a plurality of feeding means for feeding said continuous textile fabric and respectively corresponding to said plurality of detecting means,

means provided along said feeding path for processing said continuous textile fabric,

means for individually controlling said feeding means and responsive to said detecting means to disable said feeding means, individually, in response to detection of a detectable portion of said fabric by the respectively corresponding ones of said detecting means, said controlling means further being responsive to disablement of all of said plurality of feeding means to enable, a predetermined time following said disablement, said feeding means for again feeding said continuous textile fabric along said path.

3,848,439

DEVICE FOR IMPREGNATING AND DYEING WIDE TEXTILE WEBS

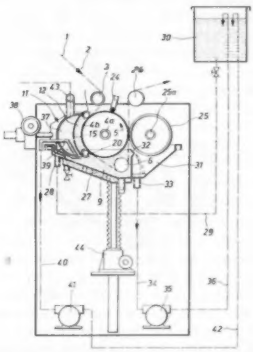
Karl Peter Lopata, Krefeld, Germany, assignor to Kleinewefers Industrie Companie GmbH, Krefeld, Germany

Filed Nov. 20, 1972, Ser. No. 308,014

Claims priority, application Germany, Nov. 18, 1971, 2157257

Int. Cl. B05c *1/10, 3/132, 11/115*

U.S. Cl. 68—184 **6 Claims**

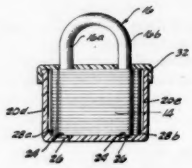


1. A device especially for impregnating and dyeing wide webs of textile material in a continous manner, which includes container means adapted to receive impregnating and dyeing liquid, roller means mounted to extend into said container means, vacuum means arranged adjacent said roller means and comprising hood means extending approximately over the length of said roller means and having its marginal area equipped with a rim-shaped structure, said vacuum means also comprising an endless sealing strip arranged in said rim-shaped structure and being positioned to press against web material passed between said roller means and said vacuum means, and means for feeding a web to be treated between said roller means and said vacuum means.

3,848,440
PADLOCK CASE

Larry, N. Manuel, deceased, late of 6161 N. Clark, Lakewood, Calif. 90712 (Ruby Joy Manuel, administratrix)

Filed Feb. 21, 1973, Ser. No. 334,491
Int. Cl. E05b *67/38*
U.S. Cl. 70—55 11 Claims

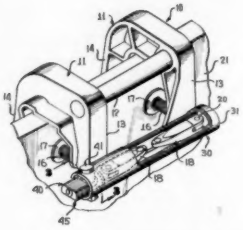


1. A case adapted to contain and surround the body portion of a padlock to protect it from mud, water, or other substances, the case including opening defining means adapted for receiving the legs of a padlock shackle, the opening defining means being comprised of two round bevelled holes each sized to form a snug fit with a respective shackle leg whereby a body portion of a padlock can be contained within the case with the padlock's shackle protruding through the case to the outside of the case.

3,848,441
OUTBOARD MOTOR ANTI-THEFT DEVICE

Adrian L. Quinley, P.O. Box 669, Bay Minette, Ala. 36507

Filed Oct. 23, 1973, Ser. No. 409,023
Int. Cl. F16b *41/00*
U.S. Cl. 70—232 6 Claims

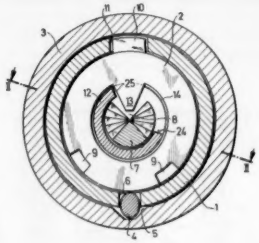


1. A latch assembly for a clamping mechanism of an outboard motor and the like of the type which includes a pair of threaded clamping members each having an actuator pivoted thereto and movable into opposed aligned relation, said latch assembly comprising an elongated tubular member of an internal cross section for receiving the aligned actuators, said tubular member having an axial slot therein extending from one end thereof to a point adjacent to but spaced from the other end thereof, said slot being of a width to receive therein the threaded clamping members, and releaseable lock means transversing said one end of said tubular member and preventing removal thereof from the clamping members and the actuators, said lock means including a conventional lock of the type including a hasp, and said hasp being fully telescoped within said tubular member in a protected position when said lock is closed.

3,848,442
BI-DIRECTIONAL CYLINDER LOCK

Pekka Henrikki Mertanen, Helsinki, Finland, assignor to Oy Wartsila AB, Helsinki, Finland

Filed Nov. 12, 1973, Ser. No. 414,940
Claims priority, application Finland, Nov. 13, 1972, 3162/72
Int. Cl. E05b *29/02*
U.S. Cl. 70—366 9 Claims

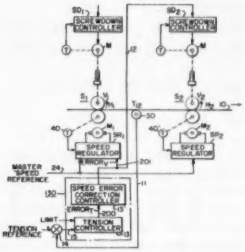


1. A cylinder lock mechanism comprising a cylinder housing with a cylindrical opening, a cylinder turnable in said opening and providing at its turning axis a free space for a plurality of locking discs provided with a central opening forming the keyway of the lock mechanism and being turnable by means of a key of the lock mechanism relative to said cylinder both in clockwise and in counter clockwise direction from a key insertion position into a cylinder-releasing position, said lock mechanism including a turnable reset member, connected through a slip clutch to said key of the lock when the key is in operating position in said keyway, so that turning of said key from its cylinder-releasing position back to its insertion position, causes a corresponding turning movement of said reset member which is provided with contact surfaces engaging said locking disc and returning them during said movement to their initial position allowing removal of said key from said lock mechanism.

3,848,443
AUTOMATIC CONTROL METHOD AND APPARATUS FOR A ROLLING MILL

Robert S. Peterson, and John W. Cook, both of Williamsville, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 31, 1973, Ser. No. 365,668
Int. Cl. B21b *37/06*
U.S. Cl. 72—8 14 Claims



1. In the method of controlling the gauge of work strip material passing through a tandem rolling mill having a plurality of roll stands, with each of said roll stands being initially

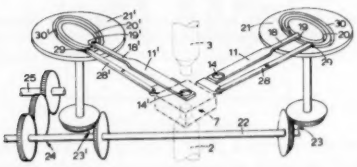
adjusted in speed and roll opening for maintaining a desired relatively constant mass flow passage of said material through the roll stands with a desired tension condition between at least one pair of said roll stands, said method including the steps of: sensing a tension deviation from said desired tension condition, changing the speed of a selected one of said pair of roll stands in response to said tension deviation to correct said tension and adjusting the roll opening of the latter of said pair of roll stands in relation to the direction of the passage of said work strip material in response to the change of speed in said selected one roll stand and concurrently changing the speed of said selected one roll stand in response to resulting change in tension, for restoring said desired mass flow condition.

3,848,444

FEED MECHANISMS

Raymond Ernest Baugh, Walsall, and John Edward Plaister, Lapworth, both of England, assignors to Taylor & Challen Limited, Birmingham, England

Filed Dec. 27, 1972, Ser. No. 319,059
Int. Cl. B21b *37/00;* **B21d** *43/20*
U.S. Cl. 72—10 **9 Claims**



1. A feed mechanism comprising two or more separate feed members which are adapted to reciprocate along respective longitudinal axes, a separate feed station positioned along the longitudinal axis of each feed member and providing a supply of workpieces to that feed member, a work station positioned at the meeting of said longitudinal axes to receive workpieces from all of said feed members, a separate unloading station positioned along the longitudinal axis of each feed member and lying on the same side of the work station as the respective feed station, and actuation means which reciprocates the feed members in synchronism so that each in turn feeds a workpiece from a respective feed station to said work station while the previous feed member to feed a work piece to the work station removes a work piece from the work station to the unloading station.

3,848,445

METHOD OF FABRICATING IMPROVED FUSE ELEMENTS

Frank L. Cameron, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 219,712, Jan. 21, 1972, Pat. No. 3,747,041. This application Apr. 17, 1973, Ser. No. 351,921
Int. Cl. B21f *3/04*
U.S. Cl. 72—142 **4 Claims**

1. A method for fabricating a fuse element, comprising the following steps:

joining the narrowest end of each piece of a two-piece mandrel having an outer periphery which is variable with mandrel length to form a complete mandrel which is smaller in cross-sectional area at the point said narrow ends are joined than at opposite ends of the completed mandrel;

winding fuse material which has a variable cross-sectional area along the length thereof, at a constant pitch on said completed mandrel to form a wound fuse element of generally constant pitch, said latter cross-sectional area of said fuse material being generally proportional to the radius of curvature of said periphery of any point along said mandrel's length;

disconnecting said two-piece mandrel while said wound fuse element is disposed thereon; and

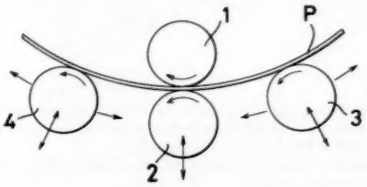
removing said separated mandrel pieces from said wound fuse element.

3,848,446

ARRANGEMENT FOR BENDING STEEL PLATES

Yasuhiro Iwasaki; Hidehiko Tsukamoto; Nobutaka Maeda, all of Hiroshima, and Chikara Takeuchi, Nagasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1972, Ser. No. 284,947
Claims priority, application Japan, Sept. 8, 1971, 46-69566
Int. Cl. B21d *5/14*
U.S. Cl. 72—168 **1 Claim**



1. An apparatus for bending a steel plate in three dimensions to form a pressure outside plating for a spherical holder or the like comprising in combination: an upper and lower roll arrangement including a center pair of pinch-type bending rolls of mating configurations, one of which being barrel-shaped and the other hourglass-shaped, said pair of rolls being divided across their longitudinal axes into the same numbers of members, some of which are firedly mounted while the remaining members are rotatably mounted as followers, said center pair of bending rolls being adjustable in position toward and away from each other, and two other hourglass-shaped pressure bending rolls disposed at appropriate distances away from the pair of bending rolls in such a matter as to be adjustable in the same direction as the said bending rolls and also to be adjustable toward and away from the said pair of bending rolls, said two hourglass rolls being also divided in the same manner across their longitudinal axes; whereby, desired bending is accomplished by forcing a plate through the center pair of bending rolls and along the hourglass rolls disposed on both sides of the pair, driving the two rolls of the center pair together in alternate directions; moving the two other hourglass-shaped pressure bending rolls on both sides of the center pair alternately toward the plate until they, by turns, reach preset positions in pressure contact with the plate; and repeating the afore-said procedure until the plate attains the desired curvature along the rolls.

3,848,447

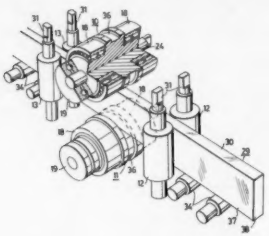
ROLLING METHOD AND A ROLLING MILL FOR CARRYING OUT THE METHOD

Per-Olof Strandell, Taby, Sweden, assignor to AB Metalform, Stockholm, Sweden

Filed Nov. 6, 1972, Ser. No. 303,842
Int. Cl. B21b *1/00*
U.S. Cl. 72—199 **6 Claims**

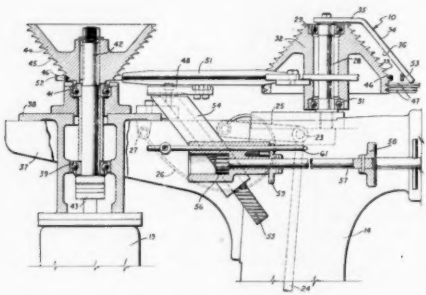
1. A method for producing a semi-finished metal section from an elongated piece of stock of rectangular cross section having two opposing first sides of greater width than the remaining two second sides, said method comprising:

a. passing the stock between two working rolls contacting the second sides, said working rolls having a diameter of at least 0.8 times the width of said first sides and being mounted for adjustable movement toward each other, and two pairs of guide rolls positioned on either side of the working rolls and contacting the first sides, said guide rolls having a smaller diameter than the working rolls and presenting a nip of constant width therebetween;



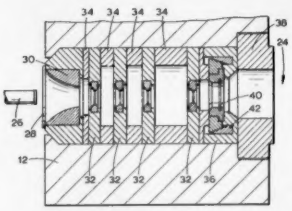
b. reversing the direction of movement of the stock and again passing it between the rolls without turning the stock around its longitudinal axis;
c. guiding the stock into and out of the roll nip during successive passes;
d. adjusting the working rolls during successive passes to bear against the second sides and to reduce the width of the first sides while maintaining a constant width between the guide rolls.

3,848,448
MACHINE DRIVE
Robert H. Allen, Barre, Mass., assignor to Charles G. Allen Company, Barre, Mass.
Filed May 10, 1973, Ser. No. 359,204
Int. Cl. F16h *7/08*
U.S. Cl. 74—242.4 **10 Claims**



1. A machine drive, comprising
a. a main body,
b. a first pulley rotatably mounted on the main body,
c. a secondary body movably mounted on the main body for movement in a plane perpendicular to the axis of the first pulley,
d. a second pulley rotatably mounted on the secondary body, the first and second pulleys having surfaces that are of the conical, stepped type tapering in opposite directions, and
e. a belt frame movably mounted on the secondary body for movement relative thereto in a plane lying at the angle of the surfaces of the pulleys,
the belt belt frame and the second pulley being movably mounted on the secondary body for movement toward the first pulley to loosen a belt relative to the first said pulley.

3,848,449
CYLINDER FORMING
David John Campion, Weston-Super-Mare, England, assignor to Cylinder Forming Limited, Somerset, England
Filed June 12, 1973, Ser. No. 369,362
Claims priority, application Great Britain, June 19, 1972, 28597/72
Int. Cl. B21d *22/28*
U.S. Cl. 72—349 **8 Claims**

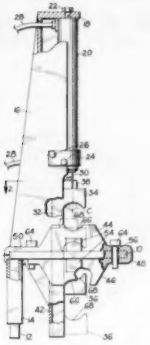


1. A method for deep drawing and ironing the interior surface of a tubular component, using a punch having a leading end provided with a rim of very hard material which projects radially proud of the outer surface of the punch, and die means comprising an intake ring and a series of ironing rings of progressively reducing diameter, which method comprises the steps of
i. locating a sheet metal blank at the mouth of the intake ring,
ii. advancing the leading end of the punch against the blank and carrying it through the intake ring and ironing rings so as to draw the blank into an elongate tubular component, and
iii. securing the component while withdrawing the punch, whereby the raised leading end thereof effects ironing of the interior surface of the component.

3,848,450
CABLE STRAIGHTENER
Eugene K. Dehlbom, 3241 Allen St., Kelso, Wash. 98626, and Rockne H. Foshaug, Route 1, Box 15, Rainier, Oreg. 97048
Filed Apr. 12, 1973, Ser. No. 350,335
Int. Cl. B21d *17/02*
U.S. Cl. 72—384 **6 Claims**

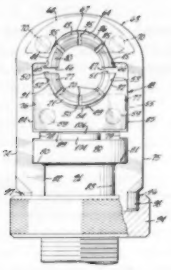
1. A cable straightener comprising:
a. a base member,
b. two pairs of laterally spaced cable support members mounted on the base member for supporting a bent portion of cable between the support members of each pair, one pair projecting from one surface of the base member and the other pair projecting from the opposite surface of the base member,
c. the base member having an opening therethrough between the cable support members of each pair,
d. a head member extending freely through said opening and having a pair of opposed head sections one associated with each of said pairs of cable support members for engaging a bent portion of cable intermediate the associated cable support members, and

e. reciprocative power means interengaging the base member and head member for moving said head member



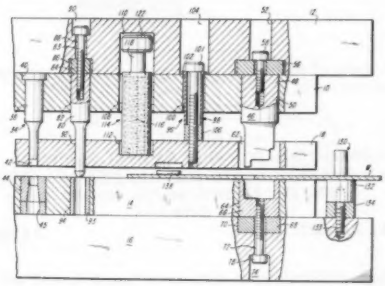
relative to the base member, whereby movemnt of each head section toward its associated cable support members effects straightening of a cable supported therebetween.

3,848,451
SWAGING TOOL
Frederick R. Allin, Long Beach, Calif., assignor to The Deutsch Company, Metal Components Division, Gardena, Calif.
Filed Nov. 24, 1972, Ser. No. 309,145
Int. Cl. B21d *39/00*
U.S. Cl. 72—402 **13 Claims**



1. A swaging tool comprising
a duality of dies,
each of said dies including a plurality of substantially parallel elongated elements collectively having an inner surface defining a generally semicylindrical contour, and an outer surface having a central part made up of a plurality of said elements collectively defining a generally cylindrical segment and side parts flatter than said central part and flaring outwardly therefrom,
said elements of each of said dies being spaced apart so as to provide a means for permitting radial compression thereof so as to reduce the radius of curvature of said inner surface,
a member carrying each of said dies,
each of said members including a surface adjacent said outer surface of the die carried thereby,
said surface of each of said members including a central part defined by a generally cylindrical segment of smaller radius than that of said generally cylindrical segment of said central part of said outer surface of said die carried thereby, and having side parts flatter than said central part of said member and flaring outwardly therefrom,
said side parts of said member engaging said side parts of said die carried thereby,
said central part of each of said members being normally spaced from said central part of said die carried thereby,
and means for moving said members relatively toward each other for compressing said dies and swaging a workpiece therebetween.

3,848,452
DIE APPARATUS
Robert J. Gargrave, Dayton, Ohio, assignor to Dayton Progress Corporation, Dayton, Ohio
Filed Mar. 20, 1973, Ser. No. 342,971
Int. Cl. B21j *13/02*
U.S. Cl. 72—448 **20 Claims**

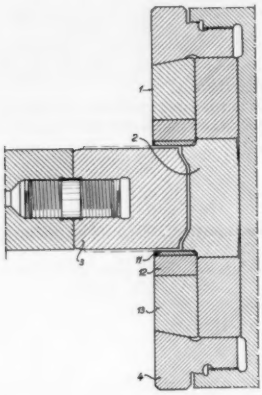


1. Die apparatus including upper and lower die halves comprising means to receive therebetween a work piece and to act thereon to modify said work piece, said lower die half including a lower die plate defining a platform for said work piece, and said upper half including a tool retainer plate mounting die tools movable therewith to and from said platform to engage said work piece and modify the same, and a disc-shaped element in association with at least a portion of said die tools for establishing the effective position thereof, said disc-shaped element being reformable as to its depth in an axial sense in correspondence with the shortening or modification of one or more of said die tools so as to maintain a prescribed relative positioning of the working portions of said die tools.

3,848,453
DIE FOR SHAPING METALS
Jean Hardt, Fribourg, Switzerland, assignor to Aluminum Suisse SA
Continuation of Ser. No. 166,536, July 27, 1971, abandoned. This application Sept. 5, 1973, Ser. No. 394,468
Claims priority, application Switzerland, Aug. 4, 1970, 11703/70
Int. Cl. B21c *3/00*
U.S. Cl. 72—467 **12 Claims**

1. A die for metal shaping operations in general and impact drawing in particular comprising a working ring of metal carbide, a coaxial stress ring of metal carbide closely surrounding and radially supporting said working ring and a coaxial steel collar closely surrounding and radially supporting said stress ring, the radial thickness of said working ring being

less than that of said stress ring, the modulus of elasticity of said working ring being greater than that of said stress ring and



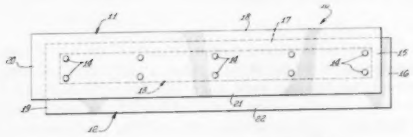
the modulus of elasticity of said stress ring being greater than that of said collar.

3,848,454

BENCH TOOL FOR SHEET METAL BENDING

Harry H. Hall, 861 E. 26th St., San Bernardino, Calif. 92404

Filed Oct. 11, 1973, Ser. No. 405,397
Int. Cl. B21d *5/16*
U.S. Cl. 72—457 **3 Claims**



1. A bench tool for sheet metal bending, said tool comprising:

a rectangular flat steel top plate approximately 3/16 inch thick;

a rectangular flat steel bottom plate approximately 3/16 inch thick;

a rectangular flat steel spacer plate about 3/32 inch thick; means for uniting said plates in parallel overlapping relation to form a peripheral series of sheet metal bending slots extending in a single plane entirely around the periphery of said tool, the bottom of each of which slots is formed by an edge of said spacer plate, the side walls of each bending slot being of unequal width and being formed by parallel peripheral portions of said top and bottom plates, and wherein

two relatively short bending slots are provided on the ends of said tool and two relatively long bending slots are provided on the sides thereof, and wherein

the side walls of the short bending slot at one end of the tool differ in width from the side walls of the slot at the other end of the tool, and wherein

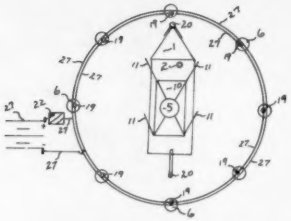
the side walls of one of said short bending slots correspond respectively in width to the side walls of one of said long bending slots, while the side walls of the other of said short bending slots correspond respectively in width to the side walls of the other of said long bending slots.

3,848,455

MAGNETIC COMPASS CORRECTOR MEANS

Philip M. Banner, 28 Oxford Rd., Massapequa, L. I., N.Y. 11758

Filed Mar. 20, 1973, Ser. No. 343,114
Int. Cl. G01c *17/38*
U.S. Cl. 73—1 E **7 Claims**



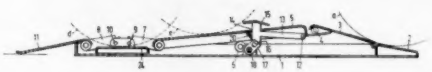
1. Compass correction means for a craft comprising a plurality of markers directionally spaced with respect to a centrally located reference point and defining an enclosure, so that each marker defines a predetermined direction with respect to said reference point; means to rotate a craft within said enclosure about said reference point to selectively line the craft with the markers and reference point for compass correction purposes; and signal means on said markers which cooperate with means on the front and rear of said craft to indicate the proper alignment of the craft with each of said markers and the reference point.

3,848,456

TESTING APPARATUS FOR SHOCK ABSORBERS ON VEHICLES

Klaas Anthonie Jacob Van der Perk, Oud-Beijerland, Netherlands, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 4, 1973, Ser. No. 347,900
Int. Cl. G01m *17/04*
U.S. Cl. 73—11 **7 Claims**

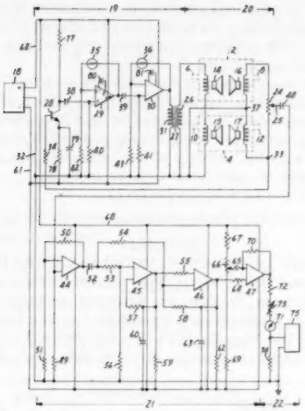


1. Testing apparatus for shock absorbers on vehicles comprising supporting means upon which vehicle wheels may be positioned, said supporting means including a first lever bearing on a base plate via a roller support, said first lever occupying a first position when at rest, said first lever responding to pressure applied from a vehicle wheel to rotate about said roller support to a second position, a second lever jointed by pivot-like means to said first lever, a third lever pivoted between the second lever and the base plate, said second lever incorporating means responsive to pressure of a vehicle wheel to turn said third lever about its pivot to the base plate and lock said first lever in substantially said second position, wheel supports jointed by pivot-like means to the base plate and to the first lever, said wheel supports rising to an upraised position capable of supporting pressure from a wheel when the first lever is locked in the second position, and release means for releasing said wheel supports and permitting pressure from a wheel to turn said third lever about its pivot to the base to release the first lever from its second position and lock it in a third position, whereby the lever arms are locked in positions enabling removal of the wheels of a vehicle from the testing apparatus without damage to the apparatus or the vehicle.

3,848,457
GASEOUS FLUID MONITORING APPARATUS

Donald James Behymer, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 14, 1973, Ser. No. 360,104
Int. Cl. G01n *31/00*
U.S. Cl. 73—24 **4 Claims**



1. Apparatus for detecting the modification of a gaseous fluid by a known material including

a first chamber for receiving the gaseous fluid;

a second chamber for receiving the gaseous fluid from an area where it is subject to being modified by a known material;

a first and second transducer positioned in each of said first and second acoustic chambers, said first transducer being an electric to acoustic transducer and said second transducer being an acoustic to electric transducer;

an oscillator connected for energizing said first transducers with a signal having a frequency that is equal to the resonant frequency of said first chamber;

a bridge circuit including said second transducers, said bridge circuit being energized by the acoustic energy received by said second transducers from said first transducers, the acoustic energy received by said second transducer of said second acoustic chamber varying with the modification of the gaseous fluid by the known material; a feedback circuit connected between said bridge circuit and said oscillator for providing said oscillator with an electrical signal proportional to the electrical signal output of said second transducer for said first chamber causing said oscillator to operate at the resonant frequency of said first chamber; and

means connected to the output of said bridge circuit and responsive thereto for providing a signal indicative of the modification of the gaseous fluid by the known substance.

3,848,458
SYSTEM FOR DETECTING ABNORMALITIES IN PIPELINES

Masahiro Soya, Kawasaki City, Japan, assignor to Tokico Ltd., Kawasaki City, Kanagawa-Ken, Japan

Filed Dec. 27, 1972, Ser. No. 318,856
Claims priority, application Japan, Dec. 28, 1971, 46-003390; Apr. 12, 1972, 47-036766
Int. Cl. G01m *3/08*
U.S. Cl. 73—40.5 R **4 Claims**

1. A system for detecting abnormalities in pipelines which comprises:

a pipeline for transferring a fluid;

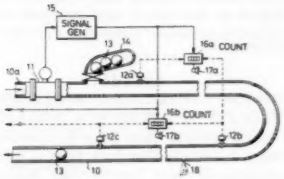
a flowmeter installed in said pipeline at the upstream fluid sending end thereof and operating to measure the flow rate of the fluid flowing thereby and to produce accordingly a pulse signal;

a traveling structure for traveling through said pipeline together with and at the same velocity as the fluid;

means provided on the pipeline at a point downstream from said flowmeter to launch said traveling structure into the pipeline;

traveling structure detecting means comprising a plurality of pairs of sensors provided in the pipeline at positions divisionally defining specific sections thereof in which abnormal points can exist to cause the velocity of the fluid at said point to differ from the velocity of the fluid at normal positions of the pipeline, the downstream sensor of one pair of sensors is used doubly as the upstream sensor of the pair of sensors divisionally defining the section adjacently downstream from the section divisionally defined by the first named pair of sensors; and

counting means operating in response to the detection signal of the upstream sensor of said a plurality of pairs of sensors to start counting said pulse signals produced by



the flowmeter and in response to the detection signal of the other downstream sensor to stop counting said pulse signal and operating to produce an abnormality detection output when the resulting pulse signal count exceeds a preset specific value, said the counting means comprising a plurality of counters provided to correspond respectively to a plurality of pipeline sections divisionally defined by said plurality of pairs of sensors,

said counting means being caused, in the case where there is an abnormality point within the pipeline section divisionally defined by said pair of sensors, to carry out counting in excess of the normal preset value by the increase in the time for the passage of the traveling structure through said pipeline section in excess of a normal reference passage time and thereby to produce said abnormality detection output, and each sensor thus doubly used being adapted to send a count stopping signal to the counter corresponding to the section for which said sensor functions as the downstream sensor and sends a count starting signal to the counter corresponding to the section for which said sensor functions as the upstream sensor.

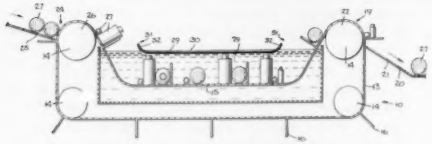
3,848,459
PRESSURE TESTING DEVICE FOR GLASS AEROSOL BOTTLES

Bruce R. Davidson, Lake Grove, and Agustus R. Agneta, Massapequa, both of N.Y., assignors to Parfums Rochas, Inc., New York, N.Y.

Filed Apr. 5, 1973, Ser. No. 348,318
Int. Cl. G01m *3/10*
U.S. Cl. 73—41.2 **4 Claims**

1. In an aerosol pressure testing apparatus for testing aerosol containers of random sizes and orientations containing fluid umder pressure including a heated liquid bath through which an endless belt conveys the containers to be pressure tested, said belt being trained around rollers disposed around

a tank holding said bath and respective rollers being disposed at elevated positions adjacent each end of the tank, the improvement comprising a plurality of transverse holding members carried by said belt for retaining said containers on said belt during passage thereof through said bath, and for receiving said containers on and discharging the same from said belt by gravity, said members each including a plurality of spaced



fingers extending outwardly from the surface of said belt, a downwardly inclined feed ramp at the input end of said apparatus and a downwardly inclined discharge ramp at the discharge end of said apparatus, each said ramp being stationary and including complementary fingers adapted to intermesh with the fingers on said belt to feed onto and discharge from said belt respectively, said containers by gravity.

3,848,460

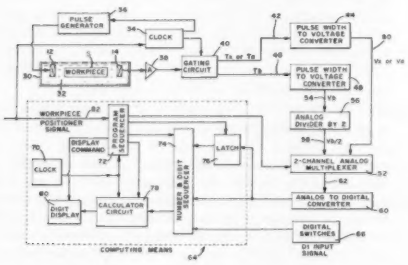
METHOD AND APPARATUS FOR MEASURING THE VELOCITY OF SOUND IN A WORKPIECE

Walter J. Bantz, Newark, Ohio; John W. Couture, Brookfield, and Richard J. Pittaro, Stamford, both of Conn., assignors to Krautkramer-Branson, Incorporated, Stamford, Conn.

Continuation-in-part of Ser. No. 262,233, June 13, 1972, abandoned. This application Oct. 31, 1973, Ser. No. 411,376

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.5 R **7 Claims**



1. Apparatus for measuring the velocity of sound in a workpiece immersed in a liquid bath by the ultrasonic pulse-echo method comprising:

a body of liquid;

a transmit transducer and a receive transducer disposed in said body of liquid and spaced a predetermined distance (D*l*) from one another;

electrical circuit means coupled to said transmit transducer and said receive transducer for producing during a first time interval a first electrical signal (T*x*) commensurate with the transit time of an ultrasonic pulse signal traversing said predetermined distance from said transmit transducer through said liquid to said receive transducer; and for producing during a second time interval during which a workpiece is disposed in said body of liquid and said transducers, separated by said distance, are acoustically coupled through said liquid to opposite sides of the workpiece a second electrical signal (T*a*) commensurate with the transit time of an ultrasonic pulse signal from said transmit transducer through the liquid and workpiece to said receive transducer, and a third electrical signal (T*b*) commensurate with one round trip transit time of the ultrasonic pulse signal in the workpiece;

means for producing a fourth electrical signal commensurate with said predetermined distance (D*l*);

means for producing a control signal indicative of the presence and absence of a workpiece in said body of liquid for denoting the condition when providing said first, second and third signals, and

computer means coupled for receiving said first, second, third and fourth signals and receiving also said control signal providing identification of said first, second and third signals for providing an output signal (V*s*) commensurate with the velocity of the ultrasonic signal in the workpiece in accordance with the formula:

$$Vs = Dl(Tx - Ta + Tb/2)/Tx(Tb/2)$$

3,848,461

ROTARY ULTRASONIC TESTING APPARATUS

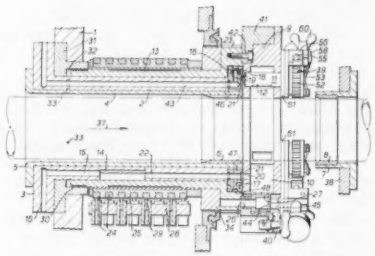
Mathew James Hetherington, Near Market Harborough, and Peter Atkinston, Stanion, nr. Kettering, both of England, assignors to British Steel Corporation, London, England

Filed May 30, 1973, Ser. No. 365,133

Claims priority, application Great Britain, June 8, 1972, 26825/72

Int. Cl. G01n *29/04*

U.S. Cl. 73—71.5 US **6 Claims**



1. Rotary ultrasonic testing apparatus including an ultrasonic probe assembly mounted for rotation so as to transcribe a close-pitched helix about a tubular body to be tested, said probe assembly being mounted for rotation on a hydrostatic liquid bearing, said liquid bearing including at least one bearing surface having at least one recess and a liquid inlet opening into the recess for supplying liquid under pressure into the recesss, and a non-recessed bearing surface against which the recessed bearing surface is arranged to abut, llquid being forced in use by the supply pressure over the edges of the recess so as to provide a low friction bearing film between the recessed surface and the non-recessed surface.

3,848,462

STRAIN CONTROL TRANSDUCER

William F. McIlrath, 3 Lemon St., Wright Patterson AFB, Ohio 45453

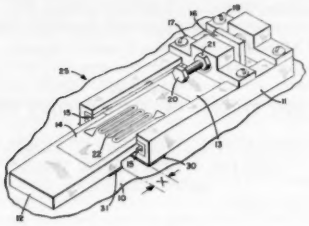
Filed June 29, 1973, Ser. No. 374,985

Int. Cl. G01n *3/32*

U.S. Cl. 73—88.5 R **10 Claims**

1. A strain control transducer comprising a carrier mounted on a strain surface, a stationary mounting plate mounted on said surface adjacent said carrier, a slidable mounting plate slidably mounted on said carrier, a strain measuring device

mounted jointly on said slidable mounting plate and said stationary mounting plate, and means mounted on said carrier



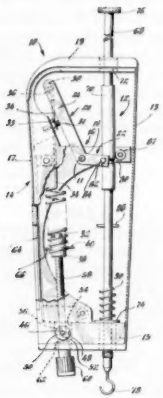
for limiting the sliding movement of said slidable mounting plate in one direction.

3,848,463

SLIP-RELEASE LINEAR FORCE GAUGE FOR DETECTING COMPRESSION AND TENSION FORCES WHICH EXCEED A STANDARD FORCE

Sid Hejzlar, and Robert M. Zweig, both of Flushing, N.Y., assignors to John Chatillon & Sons, Inc., Kew Gardens, N.Y.

Filed Apr. 20, 1973, Ser. No. 352,966
Int. Cl. G01l *5/00*
U.S. Cl. 73—141 AB **11 Claims**



1. A slip-release linear force gauge for detecting compression and tension forces which exceed a predetermined standard force level comprising:

a supporting frame having a fulcrum point located therein, rigid balance arm means pivotally mounted in said supporting frame on said fulcrum point,

means for generating a predetermined standard torque acting upon said balance arm means in one direction about said fulcrum point,

means for relating the predetermined standard torque to the predetermined standard force level against which tension and compression forces are tested,

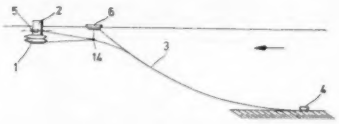
detector means slidably mounted in said supporting frame to assume a preset position and coupled to said balance arm means for generating a test torque in response to tension and compression forces applied to said detector means, the test torque acting upon said balance arm means about said fulcrum point in a direction opposed to the predetermined standard torque, said detector means being disposed to linearly slip from its preset position when the test torque exceeds the standard torque thereby indicating that the tension or compression force has exceeded the predetermined standard force level.

3,848,464

UNDERWATER MEASURING BUOY SYSTEM

Robert Hans Scheipner, Dusseldorf-Vennhausen; Helmut Schlussler, Holzbuttgen, and Raimund Germershausen, Kaarst, all of Germany, assignors to Firma Rheinmetall GmbH, Dusseldorf, Germany

Filed Mar. 7, 1973, Ser. No. 338,969
Claims priority, application Germany, Mar. 9, 1972, 2211333
Int. Cl. G01d *1/00*; **B63b** *21/52*
U.S. Cl. 73—170 A **7 Claims**



1. An auxiliary device to be applied under water for the determination of physical or chemical characteristics in waters, comprising

a measuring buoy-system,

means for retaining floating in a predetermined immersion depth said measuring buoy system,

said measuring buoy system comprising a plurality of prismatic cells, disposed parallel relative to each other and arranged about a common symmetry axis joined to a unit, for reception of measuring devices,

said cells being disposed symmetrically about a central body flown through the water,

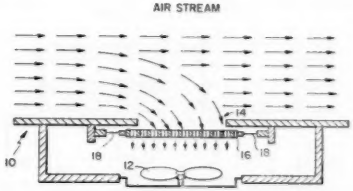
sensors disposed in said cells and including stabilization fins with said fins being disposed horizontally.

3,848,465

AIR MOMENTUM ANEMOMETER

Wallace E. Howell, R.F.D. 3 Box 400, Golden, Colo. 80401

Continuation-in-part of Ser. No. 131,120, April 5, 1971, Pat. No. 3,719,079. This application Dec. 29, 1972, Ser. No. 319,551The portion of the term of this patent subsequent to Mar. 6, 1990, has been disclaimed.
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 R **13 Claims**



1. A device for measuring wind velocity which comprises:

means to displace a portion of a first airstream from its flow path in a direction substantially normal to said flow path;

means to sense the momentum flux of the displaced portion of the airstream spaced apart from the means to displace

the portion from the airstream in a direction substantially normal to the original path and to convert the momentum flux of the displaced portion of the airstream into a force directly proportional to that displaced momentum flux;

means responsive to the means to sense and convert to produce a signal representing said force;

means to convert the signal representing said force to an alternating signal; and

means to measure the alternating signal.

3,848,466

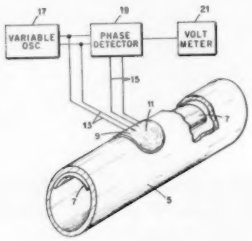
MAGNETIC TEMPERATURE SENSOR

Ralph E. Dial, Concord; John J. Keyes, Jr., Oak Ridge, and John W. Krewson, Jr., Norris, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 30, 1974, Ser. No. 438,083

Int. Cl. G01k *7/38, 13/02*

U.S. Cl. 73—349 **5 Claims**



1. A temperature sensor for monitoring the temperature and detecting rapid temperature changes of one surface of a wall of nonmagnetic material comprising:

a layer of ferromagnetic material disposed in contact with said one surface of said wall;

at least one electromagnetic coil disposed on the other surface of said wall opposite said one surface from said layer;

an electrical signal source connected to said coil for inducing magnetic fields in said layer, and means responsive to the changes in current induced in said coil from changes of the magnetic permeability of said layer with changes in temperature of said one surface for indicating the temperature of said one surface.

3,848,467

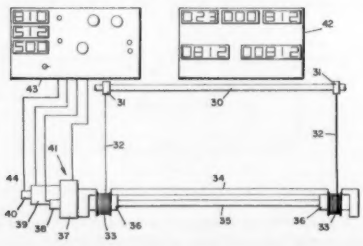
PROPORTIONED RESISTANCE EXERCISE SERVO SYSTEM

Evan R. Flavell, P.O. Box 6397, Astoria, Oreg. 94706

Filed July 10, 1972, Ser. No. 270,219

Int. Cl. A63h *21/24*

U.S. Cl. 73—379 **12 Claims**



2. An exercise apparatus including in combination:

resistance means for providing in each of two opposite directions exercise resistance proportioned to the force applied by the user,

reversing means connected to said resistance means for causing said resistance means to reciprocate automatically between two predetermined limits, and

means connected to said resistance means for displaying the user's performance.

3,848,468

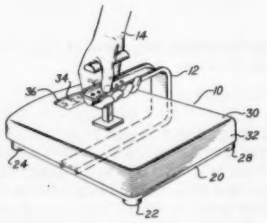
HAND GRIP TESTING DEVICE FOR BODY WEIGHING SCALES

Oran D. Richards, 1116½ Middlebury St., Elkhart, Ind. 46514

Filed Feb. 1, 1973, Ser. No. 328,609

Int. Cl. G01l *5/02*

U.S. Cl. 73—380 **5 Claims**



1. A detachable hand grip testing device for use with body weighing scales having a platform, a base, and a dial, comprising a generally U-shaped frame having a first member for seating beneath the base of the scales and a second member for extending above the platform in spaced relation thereto, a member supported by said second member and movable toward said first frame member for engaging the upper surface of said platform, and one part of a hand gripping means on said movable member and another part of a hand gripping means on said second member, for urging said movable member against said platform for registering the pressure on the scale dial.

3,848,469

SAMPLE INTRODUCTION SYSTEM FOR GAS CHROMATOGRAPH

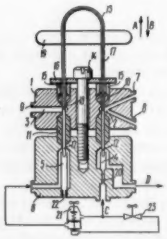
Leonid Vladimirovich Chizhov, Leninsky prospekt, 82/2, kv. 362, Moscow, U.S.S.R.

Filed Apr. 4, 1973, Ser. No. 347,727

Claims priority, application U.S.S.R., Oct. 11, 1972, 1833600

Int. Cl. G01n *1/22*

U.S. Cl. 73—422 GC **4 Claims**



1. A sample introduction system for gas chromatographs, comprising: a sampler unit having a flow-type filling chamber hermetically sealed from the atmosphere and an exhaust chamber; two connecting passageways communicating said filling chamber with said sample; a passageway connecting

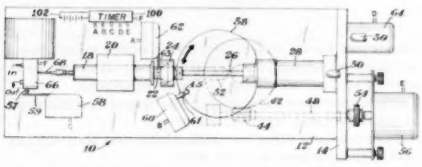
said exhaust chamber, for venting to the atmosphere; a sample inlet unit having a sample receiving chamber sealed from the atmosphere and communicating with a source of carrier gas and a chromatographic column, an overpressure chamber communicating with said carrier gas source and vented to the atmosphere; means for providing a pressure differential between said sample receiving chamber and said overpressure chamber; passages provided with sealing bushings, between said filling chamber and said sample receiving chamber and between said exhaust chamber and said overpressure chamber; a metering element formed as a bent tube with parallel ends pointing in the same direction; exit ports formed in said tube ends; rods connected with said ends of said tube beyond said exit ports, said tube and rods being slidably mounted in said sealing bushings and being capable of reciprocating between two fixed positions so that in one said fixed position of said tube with rods and said exit ports of said tube communicate with the said chambers of said sampler unit, with said chambers of said sample inlet unit being sealed from said chambers of said sampler unit by the outer surfaces of said rods, whereas in the other fixed position said exit ports of said tube communicate with said chambers of said sample inlet unit, with said chambers of said sample inlet unit being sealed from said chambers of said sampler unit by the outer surface of said tube.

3,848,470

SAMPLE COLLECTION AND DELIVERY APPARATUS

Paul Hargash, Saginaw, and Franklin J. Karle, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 2, 1972, Ser. No. 277,318
Int. Cl. G01n *1/14*
U.S. Cl. 73—425.6 **6 Claims**



1. Fluid sample withdrawal and discharging apparatus comprising a syringe-like hollow barrel having a close fitting piston therein, said barrel having a constricted forward end and an open rear end, said piston extending into said barrel from said rear end, means including an actuating rod-like member for rapidly driving said piston towards said constricted forward end and for withdrawing said piston away from said constricted end, a rotatable cam-like plate having an edge surface, means for rotating said cam-like plate, said cam-like plate being disposed adjacent to said rod-like member, contact means coupled to said rod-like member and positioned to bear against said edge surface of said cam as said piston is withdrawn away from said constricted end, and timing means cooperating with switching means selectively to actuate said means for driving said piston and said means for rotating said cam-like element.

3,848,471

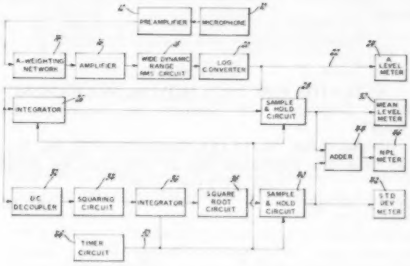
NOISE POLLUTION LEVEL MEASURING CIRCUIT

James A. Hamburg, Southfield, and Donald R. Whitney, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 23, 1973, Ser. No. 353,446
Int. Cl. G01h *3/08, 3/10*
U.S. Cl. 73/557 **5 Claims**

1. An instrument for determining noise pollution level (NPL) of sound signals according to the formula NPL $= L_e +$ 2.5 σ wherein L_e is the mean sound pressure level and σ is the standard deviation of the sound pressure level, the quantities L_e and σ being taken over a fixed time interval comprising,

a circuit responsive to the sound signals to be monitored for providing a first signal representing sound pressure level, an integrator circuit operative through a fixed time interval and responsive to the sound pressure level signal for producing a second signal representing mean sound pressure level,



a standard deviation circuit operative through the fixed time interval and responsive to the sound pressure level signal for producing a third signal representing the standard deviation of the sound pressure level and for properly scaling the third signal,

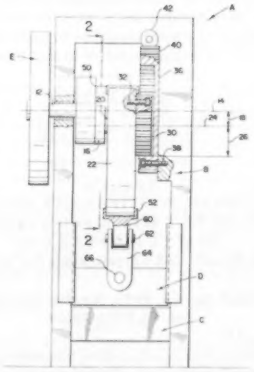
circuit means for adding the second and third signals to produce a fourth signal representing noise pollution level, and means for providing a readout of noise pollution level according to the fourth signal.

3,848,472

CYCLOID PRESS

Norman L. Pim, Salem, Ohio, assignor to Gulf & Western Manufacturing Company (Hastings), Hastings, Mich.

Filed June 4, 1973, Ser. No. 366,982
Int. Cl. F16h *37/12*
U.S. Cl. 74—52 **6 Claims**



1. In a press including a rotatable power shaft for reciprocating a slide connected with the power shaft through a connecting rod and connecting rod assembly said connecting rod assembly including inner and outer eccentrics, said inner eccentric being rotatably driven about a fixed center in a

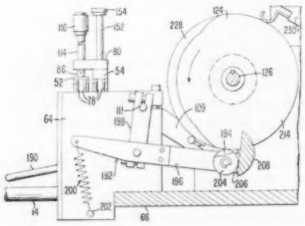
predetermined direction, an epicyclic gear train for rotatably driving said outer eccentric in a direction opposite to said predetermined direction about said inner eccentric, said gear train including a sun gear having a sun gear center coincidental with said fixed center, said sun gear being fixedly mounted against rotation, said gear train including a pinion gear mounted on said outer eccentric in engagement with said sun gear, said eccentrics and gear train being dimensioned for moving said connection substantially in the path of a three-lobe hypocycloid when said inner eccentric is rotatably driven.

3,848,473

ACTUATOR FOR TOOL MOVING MECHANISM

John C. Diepeveen, 1737 Kimberly Dr., Sunnyvale, Calif. 94087

Division of Ser. No. 18,153, March 10, 1970, Pat. No. 3,653,268. This application Feb. 24, 1972, Ser. No. 229,058
Int. Cl. F16h *25/08*
U.S. Cl. 74—53 16 Claims



1. A mechanical actuator comprising: a support; a cam mounted on the support for rotation relative thereto about a first axis; an actuator member mounted on the support for rotation about a second axis substantially parallel with the first axis and having a bearing surface spaced radially from and facing said second axis; a lever having first means for mounting the same for movement on the support in a direction transversely of said axes and second means adjacent to one end thereof for engaging said cam and said surface; and means biasing said second means into engagement with said cam and said surface, said member being movable into any one of a number of operative positions relative to said support to adjust the location of said surface relative to said cam.

ERRATUM

For Class 74—242 see:
Patent No. 3,848,448

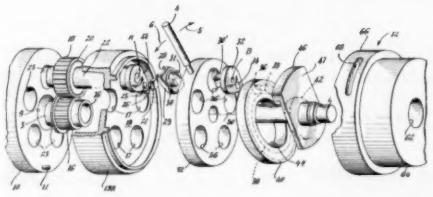
3,848,474

VARIABLE-SPEED, POSITIVE-DRIVE TRANSMISSION PROVIDING OUTPUT SPEEDS FROM ZERO R.P.M. UP TO FULL OUTPUT R.P.M.

Aaron Meyer Epstein, 268 Autumn Ridge Rd., Fairfield, Conn. 06604

Filed Jan. 10, 1973, Ser. No. 322,435
Int. Cl. F16h *29/04*
U.S. Cl. 74—117 10 Claims

1. A variable-speed, positive-drive transmission comprising:
a rotatable input connection adapted to have a rotary source of power connected thereto, said input connection being rotatable about the main axis of the transmission;
an output speed control member rotatably mounted in said transmission adapted to be turned to various angular positions about the main axis, said output speed control member having a plurality of openings therein spaced about the main axis;
a plurality of input crank arms each having an axis of swinging motion, said input crank arms being mounted on the input side of said speed control member with their swing axes parallel with the main axis;
eccentric drive means attached to said input connection and engaging the input crank arms for swinging the input crank arm back and forth about their respective swing axes;
a plurality of adjustable length crank arms mounted on the output side of said speed control member, respective ones of said adjustable length crank arms being connected through respective ones of said openings in the speed control member to respective ones of said input crank arms, said adjustable length crank arms having the same swing axes as said input crank arms and being swung back and forth by said input crank arms;
said adjustable length crank arms each having slideways thereon extending from said swing axis out toward the respective ends of said adjustable length crank arms;
a plurality of output crank arms mounted in said transmission adapted to swing back and forth abour rock axes, said rock axes extending parallel with the main axis;



a plurality of swivel means, respective swivel means being mounted on respective ones of said output crank arms, each of said swivel means having a swivel axis;
respective swivel means engaging the respective slideways of said adjustable length crank arms;
said swivel means being movable along said slideways of said adjustable length crank arms;
a plurality of over-running clutches, respective clutches being driven by respective output crank arms;
a driven gear engaged by a plurality of intermediate gears positioned thereabout;
respective intermediate gears being driven by said respective over-running clutches; and
output connection means driven by said gears and adapted to be connected to a load to be driven,
whereby turning said output speed control member to differing angular positions about said main axis changes the respective displacement between said swing axes and said swivel axes for changing the effective length of said adjustable length crank arms for varying the speed of rotation of said output connection means.

3,848,475

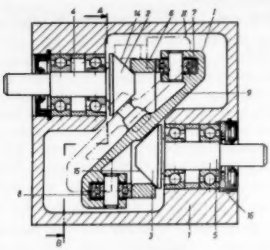
CONE TYPE FRICTION GEARING

Heinrich Tippmann, Munich, Germany, assignor to ITT Industries Inc., New York, N.Y.

Filed Apr. 17, 1973, Ser. No. 351,962
Claims priority, application Germany, Apr. 19, 1972, 2219056
Int. Cl. F16h *15/42*
U.S. Cl. 74—192 11 Claims

1. A continuously or ridgelessly adjustable friction drive, in which a friction ring is permitted to slide on coneshaped shell surfaces of bevel wheels for the purpose of adjusting the transmission ratio, comprising a friction ring, a casing, two bevel wheels rotatably supported inside the casing and having cone-

shaped shells engaging said friction ring from opposite sides, and a guide member supporting bearings arranged to engage



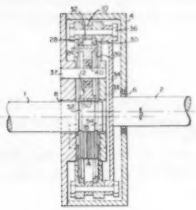
respectively opposite sides of said friction ring causing it to press against the cone-shaped shell surfaces.

3,848,476

TRACTION ROLLER TRANSMISSION

Charles Edward Kraus, Austin, Tex., assignor to Excelermatic, Inc., Leesburg, Va.

Filed June 5, 1973, Ser. No. 367,194
Int. Cl. F16h *13/02, 13/06*
U.S. Cl. 74—206 **12 Claims**



1. A traction roller transmission comprising a rotatable means having a circular race; a first roller having a circumferential race and being disposed relative to said rotatable means such that a space is formed between the races of the rotatable means and the first roller, and at least one motion transmitting traction roller rotatably supported in said space with its circumferential face in frictional engagement with the circumferential race of said first roller along a first line of contact and with the circular race of said rotatable means along a second line of contact for transmitting motion between the first roller and the rotatable means, said circumferential face and said circumferential race having a difference in curvature which is larger than the difference in curvature between said circumferential face and said circular race, and said second line of contact being shorter than said first line of contact.

3,848,477

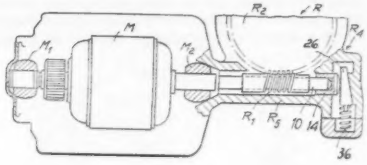
DEVICE FOR GUIDING AND RESUMING THE AXIAL CLEARANCE IN SCREWS OF REDUCTION WORMS, PARTICULARLY FOR LOW POWER GEARED MOTOR

Aldo Giandinoto, and Ugo Gilardelli, both of Milan, Italy, assignors to Fabbrica Italiana Magneti Marelli, S.p.A., Milano, Italy

Filed Mar. 2, 1973, Ser. No. 337,714
Claims priority, application Italy, Mar. 15, 1972, 21884/72
Int. Cl. F16h *1/16*
U.S. Cl. 74—425 **10 Claims**

1. Device for automatically absorbing the axial motion of a gear worm, which motion results from engagement of the worm with a reciprocating element or the like, comprising:

a motor, a motor shaft driven by said motor; said shaft having an axis; a gear worm secured on and coaxial with said motor shaft, such that said motor drives said shaft and said gear worm to rotate; said shaft having a free end which undergoes axial shift due to axial force applied to said worm;



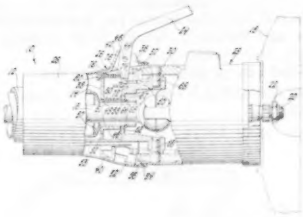
wedge means in communication with said shaft free end; said wedge means being shaped and positioned such that reciprocation thereof transversely to said shaft axis reciprocates said shaft along said axis, and said wedge means being shaped such that reciprocation of said wedge means in one direction thrusts said shaft axially away from said wedge means; spring means connected to said wedge means for reciprocating said wedge means in said one direction.

3,848,478

SHIFT LEVER BOWL ASSEMBLY

Harold J. Burke, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 12, 1973, Ser. No. 396,352
Int. Cl. G05g *9/12*; **B23p** *11/02*
U.S. Cl. 74—484 **8 Claims**



1. A steering column shift bowl assembly comprising a cylindrical shift bowl cover having a flared end-portion formed thereon, an inwardly and rearwardly extending flange formed on the end of said flared end-portion, an opening formed in said flared end-portion, and a shift bowl having a side wall whose outer surface conforms to the inner surface of said flared end-portion, a selector lever mounting clevis formed on said shift bowl wall and extending through said opening, said shift bowl being retained against said flared end-portion in a permanent, mechanical interference fit therewith by said inwardly and rearwardly extending flange.

3,848,479

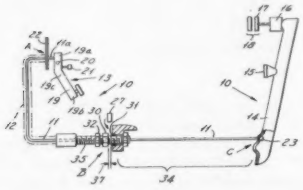
INTEGRAL ADJUSTMENT CLUTCH FORK

George R. Morris, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 278,676, Aug. 7, 1972, Pat. No. 3,800,929.
This application Nov. 5, 1973, Ser. No. 413,001
Int. Cl. G05g *23/02*
U.S. Cl. 74—522 **2 Claims**

1. Linkage having an integral adjustment gauge comprising:
a. means defining an arcuately movable first member; and

b. means defining a reciprocal second member, one of said members having at least two contact surfaces, the first surface being arranged for a pre-installation condition of said linkage when said first surface and other member is interengaged thereby defining a first effective length for said other member, and the second surface being arranged for a post-installation and operative compensating condition of said linkage when said second surface and other member is subsequently interengaged thereby defining a second effective length for said other member,



each of said contact surfaces comprising a semi-spherical seat spaced longitudinally along said first member, said reciprocal second member carrying an element having a surface for complimentary engagement with said contact surfaces whereby in the pre-installation condition said element is in engagement with the contact surfaces closest to the center of movement of said first member, and in the post-installation compensated condition, said element is in engagement with the other of the contact surfaces most remote from the center of movement of said first member.

3,848,480

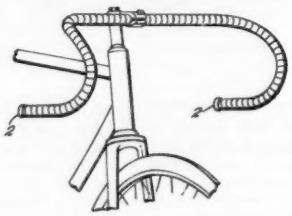
HAND GRIPS

Herbert B. Oseroff, 9800 Bay Harbor Dr., Bay Harbor Islands, Fla. 33154, and William J. Sparks, 5129 Granada Blvd., Coral Gables, Fla. 33146

Filed Feb. 5, 1973, Ser. No. 329,944

Int. Cl. G05g *1/04*

U.S. Cl. 74—558.5 **5 Claims**



1. In a hand operated device for hand powered and hand guided equipment having

a rigid handle means in the form of an operating shaft or steering mechanism, and

a gripping element encircling at least a portion of said handle means,

the improvement wherein said gripping element is formed from a reversible thermoplastic rubber having the properties:

1. Shore A hardness in the range of about 35 to about 50, as determined by ASTM standard D2240-68;

2. Tear resistance of about 120 to about 175 pounds pull, as determined by ASTM standard D624-70; and

3. Modulus at 300 percent elongation in the range of about 100 to about 400 pounds per square inch pull, as determined by ASTM standard D2433-70.

3,848,481

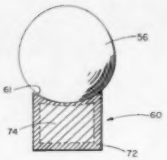
CAMS

James M. Denker, Scituate, Mass., assignor to Nutron Corporation, Hingham, Mass.

Filed Jan. 29, 1973, Ser. No. 327,651

Int. Cl. F16h *53/00*

U.S. Cl. 74—567 **11 Claims**



1. A cam defining a longitudinally-extending cam track, said cam including

a central longitudinally-extending portion underlying and defining the center of said track and

longitudinally-extending side portions on opposite sides of said central portion underlying and defining respective side portions of said track,

each of said side portions being a layer of relatively high yield point material and of substantial thickness overlying a core of relatively low yield point material, and

said central portion being one of said core and a thin layer of said relatively high yield point material overlying said core.

3,848,482

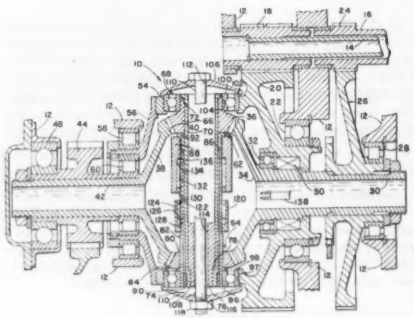
DIFFERENTIAL GEARING FOR GAS TURBINE ENGINE

Wayne C. Shank, Tucson, Ariz., assignor to Avco Corporation, Williamsport, Pa.

Filed Aug. 3, 1973, Ser. No. 385,433

Int. Cl. F16h *1/38, 1/40*

U.S. Cl. 74—710 **16 Claims**



1. A differential assembly for connecting a rotatable input shaft to a pair of rotatable output shafts, said differential assembly comprising:

a first bevel ring gear journaled for rotation and connected to one of said shafts;

a second bevel ring gear journaled for rotation about an axis coaxial with said first gear and connected to another of said shafts, said first and second ring gears facing one another;

an annular carrier surrounding said ring gears and journaled about an axis coaxial with said ring gears, said annular carrier being connected to the last of said shafts;

first and second coaxial planet gear assemblies rotatably journaled in opposite sides of said annular carrier about an axis normal to the axis of rotation of said carrier and engaging both of said ring gears;

said first planet gear assembly comprising a bevel gear and an elongated inner annular element extending radially inward through the axis of rotation of said annular carrier to a remote end adjacent said second planet gear assembly, and a balancing slug positioned in the remote end of said annular element, said balancing slug having a predetermined weight for balancing said first planet gear assembly about the axis of rotation of said carrier; and

said second planet gear assembly comprising a bevel gear and an elongated outer tubular element slidably telescoping over said annular element and extending radially inward through the center of rotation of said carrier to a remote end adjacent said first planet gear assembly, and a balacing slug positioned at the remote end of said tubular element, said balancing slug having a predetermined mass for balancing said second planet gear assembly;

whereby the centrifugally induced forces urging said planet gear assemblies radially outward are minimized.

3,848,483

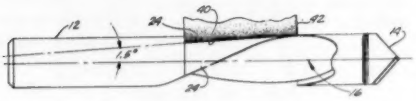
METHOD OF MAKING ROUTER BITS

Harry W. Wall, Glendora, and Eugene W. Wall, Claremont, both of Calif., assignors to Wall Machine Works, South El Monte, Calif.

Continuation of Ser. No. 272,323, July 17, 1972, abandoned, which is a division of Ser. No. 106,368, Jan. 14, 1971, Pat. No. 3,701,188. This application Dec. 21, 1973, Ser. No. 427,134

Int. Cl. B21k *5/02*

U.S. Cl. 76—101 A **3 Claims**



1. A method of making a router bit from a substantially cylindrical, elongated body having a pair of ends, the method comprising

1. holding the elongated body in a fixed position,
2. engaging the cylindrical surface of the body, at a point spaced intermediate the two ends of the body, with a generally S-shaped cutting edge of a rotary mill cutter,
3. moving the body linearly while concurrently rotating the body about its axis and rotating the mill cutter such that the S-shaped cutting edge of the mill cutter forms in the cylindrical surface of the body a single closed helical flute having a concave wall surface which gradually merges into a convex wall surface extending laterally between a pair of substantially parallel, longitudinally extending helical edges extending between a pair of longitudinally spaced apart ends located inwardly from the ends of the body, and
4. thereafter holding the grinding edge of a rotating grinding wheel at a small angle of inclination relative to the longitudinal axis of the body and then moving the angularly disposed grinding edge of the rotating grinding wheel into contact with only the unfluted portion of the body, within the confines of the two ends of the flute, and concurrently rotating the body about its axis to form a closed ground relief wall of convex curvature which encircles the body continuously from one helical edge of the flute to the other edge thereof, and intersects the helical edge along the concave wall surface of the flute to form a continuous helical cutting edge which wraps around only a portion of the circumference of the cylindrical body.

3,848,484

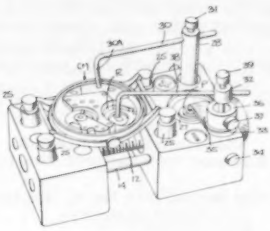
WATCH MOVEMENT HOLDER

Henry B. Fried, New York, N.Y., assignor to Bulova Watch Company, Inc., New York, N.Y.

Filed Sept. 21, 1973, Ser. No. 399,525

Int. Cl. G04d *3/00*

U.S. Cl. 81—6 **9 Claims**



1. A watch movement holder comprising:

A. a movable block having a threaded bore therein;

B. a stationary block having a lead screw extending therefrom and passing through said threaded bore whereby the position of the movable block relative to the stationary block is adjustable to set the holder to the size and shape of a watch movement bridging the blocks, said stationary block having a well formed therein for receiving a power cell to energize an electronic or electric watch movement, two terminal posts mounted on same stationary block and connected to said cell, and probes supported by and extending from said post to engage contact points on said movements, and

C. removable pegs insertable in selected holes in a row of holes formed in said movable block and in a row of holes formed in said stationary block to provide abutments to engage the periphery of the movement.

3,848,485

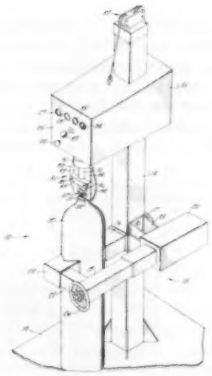
VALVING MACHINE

Carl A. Grenci, 4791 Lesa Pl., Yorba Linda, Calif. 92686

Filed Oct. 18, 1973, Ser. No. 407,416

Int. Cl. B25b *17/00, 21/00;* **B67b** *7/08*

U.S. Cl. 81—57.11 **8 Claims**



1. A machine for rotating a first member relative to a second member comprising:

means for securely holding said second member;

a pair of tongs pivotable about a pair of parallel, spaced axes;

drive means;

means forming a direct, non-friction connection between said drive means and said tongs for rotating said tongs with a torque T_1 about an axis spaced halfway between and perpendicular to said axes; and

power multiplication means operatively coupled between said drive means and said tongs for urging one ends of said tongs into contact with opposite sides of said first member with a torque T_2. T_2 being greater than T_1 whereby said tongs tightly hold said first member during turning thereof relative to said second member.

3,848,486

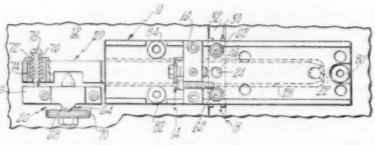
ADJUSTABLE TOOLHOLDER

Edmund J. Robichaud, 1813 Stanley St., New Britain, Conn. 06053

Filed Dec. 20, 1973, Ser. No. 426,445

Int. Cl. B23b *29/10*

U.S. Cl. 82—36 R 12 Claims



1. A toolholder assembly comprising a support, a toolholder mounted for movement on the support relative to an adjustment axis of the toolholder, the support and toolholder having cooperating guide means limiting toolholder movement to rectilinear motion on the support transversely of the adjustment axis of the toolholder, an operating bar having a pivot connection to the support and a drive connection to the toolholder for moving the toolholder in a selected linear direction laterally of the toolholder and its adjustment axis, and an adjustment device for actuating the operating bar, the pivot and drive connections of the operating bar permitting angular movement of the operating bar to effect precision lateral movement of the toolholder transversely of its adjustment axis as established by the cooperating guide means.

3,848,487

TOOL HOLDERS FOR MACHINE TOOLS

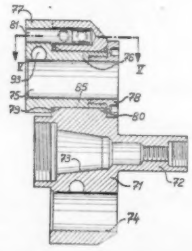
Charles Willen, 14, Route du Stand, 1844 Villeneuve, Switzerland

Division of Ser. No. 67,370, Aug. 27, 1970, Pat. No. 3,750,498. This application Aug. 7, 1973, Ser. No. 386,297

Claims priority, application Switzerland, Aug. 29, 1969, 13108/69; Aug. 29, 1969, 13109/69; Aug. 29, 1969, 13110/69; Aug. 29, 1969, 13112/69

Int. Cl. B23b *29/12*

U.S. Cl. 82—36 R 4 Claims



1. A tool holder comprising a tool holder body and a tool carrying and automatically tool relieving means on said body, said means comprising a tubular sleeve mounted for pivoting movement about its axis in a hole of the body and adapted to carry a tool support, a nut attached to and concentric with an end portion of the sleeve for pivotal movement therewith, means forming parts of said body, sleeve and nut defining conical, cylindrical and planar surfaces, two antifriction bearings on said surfaces, to facilitate the pivoting movement of the sleeve, and means including said nut, for subjecting the bearings to a stress in operational use of a tool mounted on the tool support, play between opposed surfaces of the body and the sleeve being limited to play which protects the bearings from overload.

3,848,488

MULTISPINDLE HAND SCREWING DEVICE OR BRACE

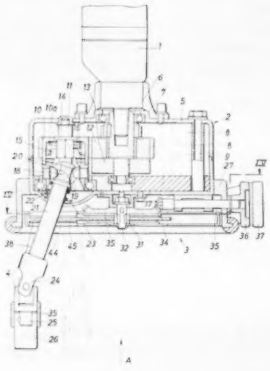
August Weisenburger, Sophienstrasse 6, Frankfurt am Main, Germany

Filed Jan. 4, 1974, Ser. No. 430,749

Claims priority, application Germany, Jan. 9, 1973, 2300848

Int. Cl. B25d ; B25b *17/00, 23/02*

U.S. Cl. 81—52.4 R 14 Claims



1. A multispindle hand screwing device or brace, in particular for tightening and unscrewing the wheel screw fastenings of motor vehicles, having a drive motor which drives via a transmission unit a plurality of screw spindles provided at their free ends with a screwing implement and with the interposition in each case of a claw or dog coupling which automatically disengages at a predetermined torque, each screw spindle comprising a universal joint shaft having two joints, and the spindle end provided with the screwing implement being guided parallel in each case by a radially movable slide member which can be moved by a drive unit common to all the slide members.

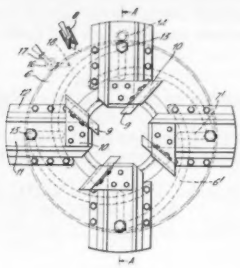
ERRATUM

For Class 82—19 see:
Patent No. 3,848,505

ERRATUM

For Class 82—36 see:
Patent No. 3,848,486

3,848,489
ROTARY MACHINE TOOL
Augustin Zabaleta Santana, Prim 43, Bilbao, Spain
Filed Mar. 9, 1973, Ser. No. 339,647
Int. Cl. B23b 3/04, 5/14
U.S. Cl. 82—61 12 Claims

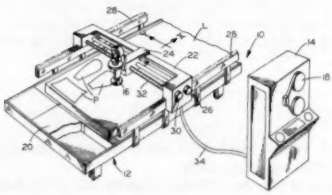


1. A machine apparatus comprising a tool carrier, first and second axially aligned wheels having a common axis, at least one guide slot in each said wheel, the slot in one of said wheels extending radially and the slot in the other said wheel subtending an angle at the center of said other wheel and having one end closer to said center than the other end thereof, means for rotatably mounting said wheels, a pair of coaxial pinion gears separately engaging said first and second wheels and having different diameters for producing relative rotary displacement between said first and second wheels, means slidably mounting said tool carrier with respect to one of said wheels, means coupled to said carrier and engaging the slots in said first and second wheels for displacing said carrier in response to relative rotation of said wheels, and means for selectively holding one of said wheels at a fixed angular position.

ERRATUM

For Class 83—36 see:
Patent No. 3,848,487

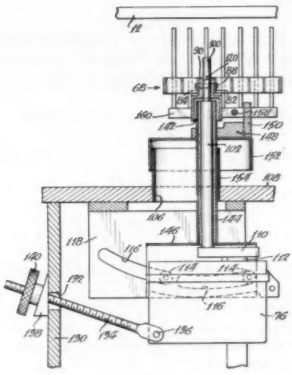
3,848,490
METHOD AND APPARATUS FOR CONTROLLING A CUTTING TOOL
Roger R. Arel, New Britain, Conn., assignor to Gerber Garment Technology, Inc., East Hartford, Conn.
Filed Nov. 2, 1973, Ser. No. 412,149
Int. Cl. D06h 7/00
U.S. Cl. 83—49 25 Claims



1. In combination in an automatically controlled cutting machine having a cutting table with a cutting tool and a support surface on which sheet material to be cut is spread and held by means of a vacuum holddown system, the table also including means for moving the cutting tool and the sheet material on the surface relative to one another along a line of cut with the tool advancing in cutting engagement with the material, the improvement comprising:

means for sensing previous cuts by the tool in the sheet material in the region of the cutting tool as the tool advances through the sheet material.

3,848,491
SLICE RECEIVING PLATTER FOR SLICING APPARATUS
Keith E. Flesch, Garrett, Ind., assignor to Peter Eckrick & Sons, Inc., Fort Wayne, Ind.
Filed Apr. 16, 1973, Ser. No. 351,444
Int. Cl. B26d 7/00
U.S. Cl. 83—77 11 Claims



1. In a slicing apparatus, the combination comprising: a slicing blade; means mounting said slicing blade for rotation about a substantially vertical axis; means for rotating said slicing blade about said substantially vertical axis; means above said blade for progressively feeding material to be sliced toward said blade; a slice receiving platter; means mounting said slice receiving platter at a fixed location below said blade to receive slices as they are cut by said blade; and means for adjusting the angular relationship of the platter in two planes with respect to said blade whereby said platter may be adjusted to receive slices in perfect stacks for a variety of slice types and stack thicknesses.

3,848,492
APPARATUS FOR LONGITUDINALLY SEPARATING SERIALLY PRODUCED SYNTHETIC-RESIN PACKAGES
Artur Vetter, Gronenbach, Germany, assignor to Multivac Sepp Haggenmuller KG, Wolfertschwenden/Allgau, Germany
Filed Feb. 2, 1973, Ser. No. 329,204
Claims priority, application Germany, Feb. 4, 1972, 2205233
Int. Cl. B26d 7/06
U.S. Cl. 83—99 11 Claims

1. In combination with a machine that produces a continuous synthetic-resin band that emerges longitudinally and stepwise from the machine and is formed with a plurality of longitudinally spaced packages, an apparatus comprising:

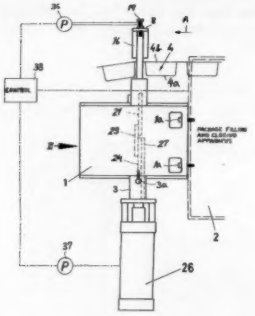
a frame longitudinally downstream of said machine;

an upper cutter beam fixed on said frame and provided with a cutting element having at least one straight section extending transverse to the longitudinal direction of displacement of said packages and at each end of said straight section two oppositely curved sections each tangential to and forming a continuation of said straight

section, said sections having cutting edges lying in a common plane;

a vertically displaceable lower cutter beam on said frame having a planar upper surface parallel to said plane;

means for lifting said lower beam to transversely sever said band between two of said packages by chopping same between said beam and said cutter element and for lowering said lower beam to allow at least one more package to advance between said beam;



at least two pneumatic cylinders formed in said element between said curved sections;

respective pistons in said cylinders having piston rods displaceable out of said cutting element below said plane;

means biasing said pistons into a position with said rods above said plane; and

means for applying fluid pressure to said pistons to push them down and thereby engage said rods against portions of said band cut free by said curved sections.

3,848,493

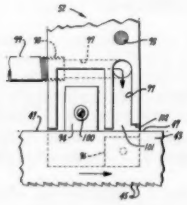
PIVOTAL ARM BAND SAW

Gerald R. Harris, Livermore, Calif.

Division of Ser. No. 86,732, Nov. 4, 1970, Pat. No. 3,682,030. This application Aug. 8, 1972, Ser. No. 278,851

Int. Cl. B27b *13/12*; **B23d** *55/08*; **B27b** *13/10*

U.S. Cl. 83—168 **2 Claims**



1. In a band saw including a frame, a pair of relatively spaced apart wheels rotatably mounted to said frame and formed for receipt and carrying of a continuous loop band saw blade thereon, and guide means including at least one guide member mounted to said frame intermediate said wheels and formed to guide and orient a portion of said saw blade for cutting of a work piece, said guide member being positioned to guide said saw blade before said saw blade advances into contact with said work piece, said guide member further including a plurality of blade engaging elements positioned to engage said blade on both sides thereof and formed for sliding engagement with said saw blade, the improvement comprising:

a coolant channel formed in said guide member and terminating in a discharge opening positioned for discharge of coolant onto the smooth back edge of said saw blade, said discharge opening being positioned and said guide member being adapted for flow of said coolant from said discharge opening over both sides of said saw blade at a position in advance of the first engagement of said saw blade with any of said blade engaging elements in said guide member contacting the sides of said saw blade as said saw blade moves through said guide member.

3,848,494

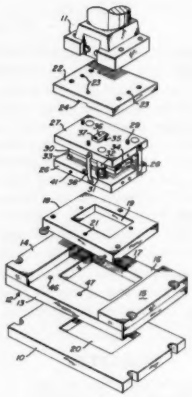
PRESS ADAPTER SYSTEM FOR STANDARDIZING DIE USE

Robert J. Gargrave, and Ludomil A. Holiga, both of Dayton, Ohio, assignors to Dayton Progress Corporation, Dayton, Ohio

Filed Dec. 7, 1972, Ser. No. 313,163

Int. Cl. B26d *7/06*

U.S. Cl. 83—109 **32 Claims**



1. For use in a press or like apparatus providing a press slide and a press bed, elements adapting the press to a facile installation and exchange of dies, including a thrust plate for removable mounting to the press slide and a bolster plate assembly for removable mounting to the press bed, said thrust plate providing means for the mounting of a tool holder element of a die thereto, said bolster plate assembly including a bolster for removable mounting to the press bed and a platen removably mounted to the bolster, said removable platen having means for the releasable mounting of a die holder element of the die thereto, and means positioning said platen upon said bolster to provide a proper basis for the accurately aligned mounting of the die holder element opposite the tool holder element.

3,848,495

DIE FIXTURE

Charles J. Youra, Van Nuys, Calif., assignor to Doric Corporation, Oklahoma City, Okla.

Division of Ser. No. 238,803, March 28, 1972, Pat. No. 3,777,602. This application Oct. 25, 1973, Ser. No. 409,710

Int. Cl. B26d *7/06*

U.S. Cl. 83—128 **13 Claims**

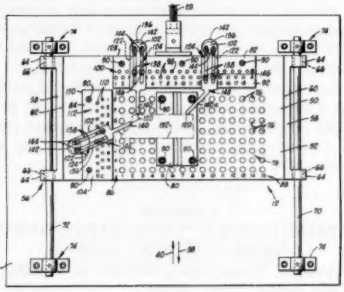
1. A die fixture for positioning a workpiece blank, comprising:

a base, having an upper and a lower face;

support means connected to the upper face of the base, having an engaging surface formed thereon and a plural-

ity of index openings formed in an upper face thereof, each of the index openings identifiable via locating indicia;

locators, each locator having a blank engaging surface and a stop surface and secured in a predetermined assembled position on the upper surface of the support means, the stop surfaces of each of the locators engaging the engaging surface of the support means positioning each of the locators in one direction; and



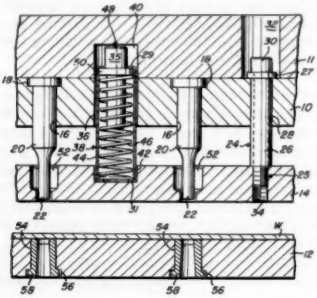
means removably securing each of the locators to the upper surface of the support means via predetermined index openings locating each of the locators in one other direction securedly positioning the blank engaging surfaces of the locators in a predetermined assembled position, each blank engaging surface engaging a portion of the workpiece blank for positioning the workpiece blank in a predetermined position.

3,848,496

DIE AND SPRING ASSEMBLIES HAVING PARTICULAR APPLICATION TO STRIPPER PLATES

Harry A. Stevens, Union, and Allan E. Randolph, Sr., Dayton, both of Ohio, assignors to Dayton Progress Corporation, Dayton, Ohio

Filed Jan. 15, 1973, Ser. No. 323,955
Int. Cl. B26f *1/14*
U.S. Cl. 83—133 **14 Claims**



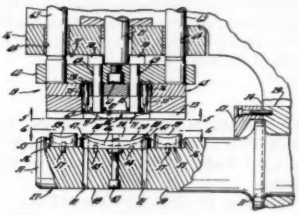
1. In a die for use in a punch press or like equipment including a first die means providing a first die shoe to which is secured a tool retainer, a second die means providing a second die shoe to which is fixed a die plate, stripper plate means interposed between said die means and normally displaced from and mounted for movement to and from said tool retainer, work being accomplished by the die in movement of one of said die means relative the other between an open position of the die in which said tool retainer and stripper plate are displaced from each other and from said die plate and a closed position in which work is performed by tools mounted by said tool retainer, and biasing means positioned between said first die means and said stripper plate, said biasing means including compressible spring means and a cage-like housing therefor, said housing basing on said stripper plate and having a relatively reciprocable relation to said first die means and there being means responsive to relative motion of said die means in a closing movement of the die to compress said spring means independently of said housing, expansion of said spring means responsive to relative motion of said die means in an opening movement of the die being limited by said housing.

3,848,497

PRESS FOR PUNCHING HOLES IN TUBULAR MEMBERS

Paul M. Lancaster, Rockford, and Eugene H. Paquet, Winnebago, both of Ill., assignors to W. A. Whitney Corp., Rockford, Ill.

Filed Nov. 7, 1973, Ser. No. 413,502
Int. Cl. B23d *21/14*
U.S. Cl. 83—192 **8 Claims**



1. A press for punching a slug from the side of a tubular member to form a hole therein, said press including a frame, a vertically reciprocable ram mounted on said frame, a female die member carried by said ram, a horn secured to said frame and projecting beneath said female die member to telescopically receive said tubular member, a male die member secured to said horn and underlying said female die member, said female die member having a central opening of predetermined size and shape and having a lower surface curved in conformance with the outer surface of said tubular member, said male die member having a cross-sectional size and shape approximately equal to the size and shape of said opening and projecting upwardly from said horn to mate with said female die member to punch said slug from the side of said tubular member, said male die member further having an upper surface curved in conformance with the inner surface of said tubular member to keep from deforming said slug as the latter is punched from the tubular member so the slug may be refitted within the hole in the side of the tubular member, a small punch carried by the ram and projecting downwardly through said opening in said female die member, and a small hole formed through said male die member to receive said small punch to form a small hole in said slug as an incident to punching said slug from the tubular member.

3,848,498

ROTARY SLICER FOR FRUITS AND VEGETABLES

Louis P. Lazzarini, San Jose, Calif., assignor to Genevieve I. Hanscom; Robert Magnuson and Louis J. Thompson, Trustees of the Estate of Roy M. Magnuson, part interest to each

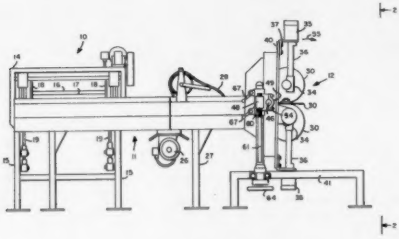
Filed May 18, 1973, Ser. No. 361,767
Int. Cl. B26d *7/06*
U.S. Cl. 83—401 **7 Claims**

1. A power-driven slicing machine for cutting produce into segments, comprising:

a plurality of power-driven disc blade assemblies each mounted for rotation and adapted to slice produce;

means supporting said disc blade assemblies such that they diverge from a common center line radially outward;

means for feeding the produce in single-file order along a feed line intercepting said common center line such that



the produce is cut into segments by the slicing action of the power-driven disc blades, and

means to vary the relative positions of the power-driven disc blade assemblies and the feeding means so as to alter the angle between the center line and the feed line thereby to change the configuration of the segments resulting from the slicing of the produce.

3,848,499

APPARATUS FOR MECHANICALLY CUTTING FLANGES FROM PRESHAPED STEEL CONSTRUCTION MEMBERS

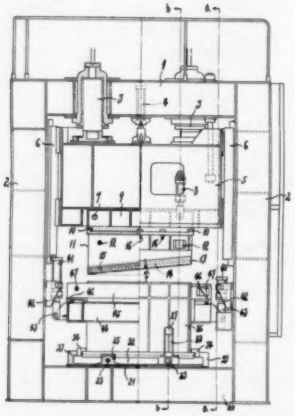
Ichiro Tanaka, 4-3 Kudegadanicho, Nishinomiya, Hyogo Prefecture, Japan

Filed Aug. 10, 1973, Ser. No. 387,251

Claims priority, application Japan, Aug. 11, 1972, 47-81031

Int. Cl. B26d *7/02*

U.S. Cl. 83—461 **6 Claims**



1. Apparatus for cutting off opposite flanges from the connecting web of shaped steel articles, with the cutting being at the junctions between inner faces of the flanges and said web, comprising in combination:

a. two cutting blades assembled in rigid spaced apart parallel relation with means to selectively pre-adjust the distance therebetween for different size shaped sections to be cut;

b. means by which the cutting blades are mechanically advanced to be pressed against and retracted from an article to be cut,

c. adjustable support means including two supports having support portions for supporting said flanges of an article to be cut, and for bearing a force acting on the article during cutting, and also having flange clamping or engaging face portions to accomodate the article to be held and cut;

d. two protective rigid support members adjustably spaced apart by means for expansively and retractively adjusting the distance therebetween to move said members into pressing contact with the inner faces of the flanges of the article to be cut, and to protectively support said article to thereby prevent the flanges from buckling; and

e. further including means connected with said protective support members adapted to adjust their said pressing contact position with said flanges, and means enabling said support members to retract as the cutting blades are advanced.

3,848,500

REGISTERING DEVICE FOR GAPS TO BE FORMED IN A SLIDE FASTENER CHAIN

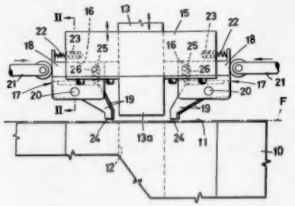
Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogy Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1973, Ser. No. 421,110

Claims priority, application Japan, Dec. 6, 1972, 47-140020[U]

Int. Cl. B26d *7/02*

U.S. Cl. 83—465 **2 Claims**



1. A registering device for gaps to be formed in a slide fastener chain having rows of continuous fastener elements and intermittently transported in a horizontal plane, which device comprises in combination with a cutting tool:

a. a vertically movable supporting block;

b. a pair of carriages mounted movably in said block and positioned on opposite sides of the cutting tool;

c. a pair of clamping arms pivotally connected to the respective carriages and adapted to compress a length of fastener elements inwardly adjacent the cutting tool;

d. actuating means for moving said carriages horizontally inwardly toward each other relative to the cutting tool;

e. a first spring means interposed between said block and each of said carriages and normally urging the latter away from the cutting tool; and

f. a second spring means adapted to urge said clamping arm normally toward the plane of the fastener chain.

3,848,501

FABRIC CUTTING

Mathew Kuts, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

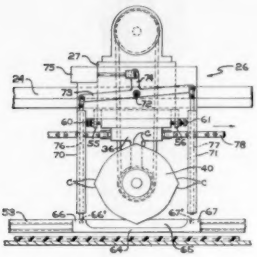
Filed July 20, 1973, Ser. No. 380,982

Int. Cl. B26d *1/20*; **B23d** *19/02*

U.S. Cl. 83—471.3 **8 Claims**

1. A bias cutting apparatus for cutting rubberized fabric comprising a support frame, a carriage mounted on said sup-

port frame for reciprocal movement, power operated means connected to said carriage for reciprocating said carriage, a cutter means journaled on said carriage for rotation thereon, drive means mounted on said carriage operatively connected to said cutter means for rotating said cutter means, said cutter means having a plurality of spaced linear cutting edges, a guide plate secured to the lower portion of said support frame over which fabric is moved and under which a conveyor belt travels, anvil means operatively connected to said carriage for



movement therewith, said anvil means supported against lateral movement on said guide plate and guide for longitudinal reciprocal movement on said guide plate, said anvil means having a linear cutting edge and a pair of spaced bosses, biasing means connected to said cutter means to bias a portion of the cutting edges of said cutter means into shearing contact with said linear cutting edge of said anvil means, drive means selectively interconnecting one or the other of said bosses to said carriage for reciprocal movement of said anvil therewith.

3,848,502

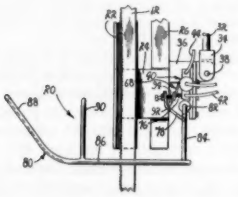
SAFETY DEVICE FOR PROTECTING AN OPERATOR'S HANDS

Edwin R. O'Neill, 2393 Barstow Ave., Fresno, Calif. 93705

Filed Nov. 5, 1973, Ser. No. 413,356

Int. Cl. B26d *4/22, 7/22*

U.S. Cl. 83—814 **7 Claims**



7. In a safety device for protecting an operator's hands from the cutting surface of a device adapted to cut hand-fed workpieces, the improvement comprising:

A. a shield adapted to be arranged in juxtaposition with a cutting surface of a selected device supported for rectilinear motion along a substantially linear path extending between a first position wherein the shield is disposed in a protective relation with said cutting surface and a second position, spaced from said first position, wherein said shield is disposed in non-protective relation with said cutting surface; and

B. actuating means including a fluid-pressurizable actuator connected to said shield adapted to respond to pressurization for moving said shield from said first position to said second position, means for selectively pressuring said actuator including a selectively operable fluid control valve connected to a source of fluid maintained under pressure, and feeler means connected to said fluid control valve adapted to respond to an engagement with a workpiece for operating the fluid control valve and so disposed as to be engaged by a workpiece as the workpiece is hand-fed to said device.

3,848,503

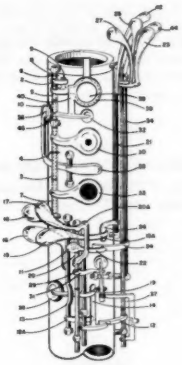
OBOE FINGERING SYSTEM AND MOUTHPIECE

Dick Paladino, 4221 San Bernardino Ave., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 349,625, April 9, 1973. This application Nov. 20, 1973, Ser. No. 417,555

Int. Cl. G10d *7/00*

U.S. Cl. 84—380 **4 Claims**



1. In an oboe or English horn, having an upper portion and a lower portion, a key arrangement comprising:

first, second, and third tone holes in said upper portion corresponding to B natural, A natural, and G natural,

first, second and third vented tone hole covers and keys integral therewith said keys being located to be normally activated by the first, second, and third fingers of the left hand,

fourth, fifth and sixth tone holes in said lower portion corresponding to F natural, F sharp and D natural respectively, a ventless tone hole cover over said fourth tone hole cover and a fourth key overlying said ventless cover located to be normally activated by the first finger right hand, and

vented tone hole covers and keys integral therewith overlying said fifth and sixth tone holes located to be normally actuated by the second and third fingers of the right hand.

3,848,504

MUSICAL TOY

Kenneth W. Ingham, 49 Joycelyn Cres., Georgetown, Ontario, Canada

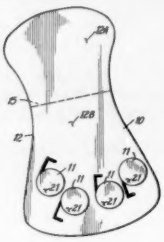
Filed Sept. 26, 1973, Ser. No. 401,048

Int. Cl. G10d *13/08*

U.S. Cl. 84—402 **3 Claims**

1. A musical toy instrument formed of a flat base on which is mounted a plurality of hollow capped metal cylinders, each with a metal disc loosely fitted in the interior of the cylinder, the base of the instrument being formed of a non-metallic semi-rigid material, with

said cylinders and discs mounted, each spaced with relation to each other so as to correspond to the spacing of fingers of the user, together with a thumb rest holder mounted on



the base of the device to enable the user to position the fingers of a hand with respect to the location of the individual cylinders, so as to be able to individually tap each cylinder with a specific finger.

3,848,505

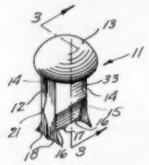
HOLE PUNCHING FASTENER FOR SHEET METAL

Floyd Leroy Wilson, P.O. Box 203, Manhattan, Kans. 66502

Filed Jan. 16, 1973, Ser. No. 324,159

Int. Cl. F16b *15/06*

U.S. Cl. 85—19 **6 Claims**



1. A self-penetrating rivet for fastening superimposed pieces of sheet metal together by driving an I-shaped slit therein and downwardly deforming portions of the sheet metal sheets to form locking lugs, comprising a shank member provided with an enlarged head, said head having a flat, horizontal bottom and said shank depending centrally from said bottom, said shank member further having upper and lower portions separated by an intermediate portion, the upper portion having a depth approximately equal to the total depth of the locking lugs to be formed in the sheets of metal, at least the lower and intermediate portions of said shank member having a generally I-shaped cross section defining a web member and flange members at the opposite side edges of said web member, the lower ends of the web member and flange members being shaped to define cutting edges, the cutting edge of each flange member being downwardly concavely arcuately curved on opposite sides of the web member, the web member in said intermediate portion of the shank member being formed to define upwardly facing locking shoulders on its opposite faces to lockingly engage under portions of the locking lugs formed on the superimposed pieces of sheet metal when the shank member is driven therethrough so that the lower portion of the shank member is completely below the locking lugs, whereby to clamp the locking lugs between the locking shoulders and the flat horizontal bottom of said head on both sides of said web member.

3,848,506

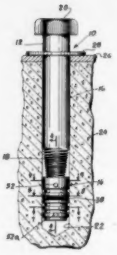
EXPANSION ANCHOR

Kenneth B. Zifferer, c/o Expansion Bolt Company, 500 State St., York, Pa. 17405

Filed Dec. 15, 1972, Ser. No. 315,546

Int. Cl. F16b *13/06*

U.S. Cl. 85—83 **18 Claims**



1. An expansion anchor, comprising:

a. a bolt and an expansion sleeve therefor,

b. said bolt consisting of a generally cylindrical shank, a conically tapered and threaded tip at the lower end of the shank and torque tool engageable means at the upper end of the shank,

c. said conically tapered and threaded bolt tip being circular in cross-section at all points along its longitudinal axis, with progressively increasing radii of curvature in upward direction,

d. said expansion sleeve being internally tapered and threaded to receive said conically tapered and threaded bolt tip in screw-threaded engagement therewith,

e. said expansion sleeve being also longitudinally slit to form a plurality of longitudinally extending parts,

f. said longitudinally extending parts being arcuately shaped, in cross-section, at all points along the longitudinal axis of the expansion sleeve, with progressively increasing internal radii of curvature corresponding, substantially, to the progressively increasing radii of curvature of the bolt tip in that portion of the bolt tip whereon the expansion sleeve is adapted to be substantially fully engaged and expanded,

g. the respective radii of curvature of the bolt tip and expansion sleeve along their longitudinal axes being out of phase when the bolt tip initially engages the expansion sleeve and moving progressively into phase as the bolt tip is progressively threaded into the expansion sleeve until the bolt tip is substantially threaded into the expansion sleeve and substantial expansion thereof is attained, at which time their respective radii of curvature substantially coincide.

3,848,507

PIPELINE FOR DELIVERING CROSS-LINKED SLURRIED EXPLOSIVES

Adam Prus Wisinski, Parkdale, Australia, assignor to ICI Australia Limited, Melbourne, Victoria, Australia

Filed Oct. 27, 1972, Ser. No. 301,520

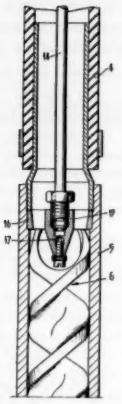
Claims priority, application Australia, Nov. 12, 1971, 7013/71

Int. Cl. C06b *21/02*

U.S. Cl. 86—1 R **2 Claims**

1. A pipeline for delivering cross-linked slurried explosives having at the discharge end a collinear rigid tubular open-ended extension of approximately the same diameter, a turbine within the extension, a rotatable stirrer mounted for

rotation by the turbine within the extension at the end thereof remote from the pipeline, and means for delivering liquid cross-linking agent into the extension, said means including an



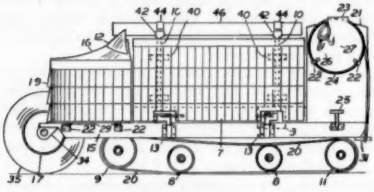
inner tube of external diameter small in relation to the internal diameter of the pipeline extending along and within the pipeline to terminate in an outlet within the extension between the pipeline and the stirrer.

3,848,508

INFANTRY ATTACK VEHICLE WITH RESILIENT ARMOR

David John Bullinger, Cayuta Rd., Van Etten, N.Y. 14889

Filed June 7, 1973, Ser. No. 367,704
Int. Cl. F41h *7/04*
U.S. Cl. 89—36 H **4 Claims**



1. An infantry attack snowmobile having a propelling motor, transmission and frame comprising:

a. a rubber tired wheel for stearing said snowmobile;

b. wrap-around resilient armor for providing shielding for said propelling motor and transmission, said armor comprising a series of outwardly extending flat spring blades, a steel backup plate, means securing said spring blades to said backup plate, and means securing said backup plate to said frame;

c. a removable panel of resilient armor comprising several rows of outward extending steel spring blades, an inner backup steel plate, said blades being secured to said steel plate by spot welding, and a plurality of uprights secured to said inner backup steel plate for supporting said removable panel, each of said uprights comprising an upper portion, a lower portion and a laterally offset portion connecting said upper and lower portions;

d. spring means resiliently biasing said latterally offset and upper portions of said uprights latterally outward from said frame;

e. a plurality of round sockets attached to opposite sides of the frame, said lower portion of said uprights being set into said round sockets on one side of the frame whereby said removable panel may be moved by removing said lower portions of said uprights from the sockets on one side of the frame and placing said lower portions of said uprights into the sockets on the opposite side of the frame;

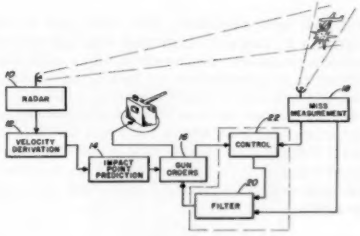
f. a plurality semicircular rocket launcher supports, means pivoting each of said rocket launcher supports on the top of each of said upper portions of said uprights, and elastic rocket launcher holddown straps.

3,848,509

CLOSED-LOOP GUN CONTROL SYSTEM

Robert J. Corn, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 31, 1972, Ser. No. 302,635
Int. Cl. F41g *3/06, 3/08*
U.S. Cl. 89—41 AA **12 Claims**



1. A system for directing the firing of a weapon at a target comprising:

means for determining the velocity of the target;

means for predicting an impact point for the projectile next to be fired from said velocity;

means for deriving a gun order for aiming the weapon based on the predicted impact point;

means for measuring at least one performance component of a previously fired projectile; and

means for determining a correction to be applied to said gun order based on said measured performance component of said previously fired projectile, the correction-determining means including a recursive filter connected to a linear predictor, and a storage-feedback device connected to the linear predictor and recursive filter.

3,848,510

BOLT LOCKING MECHANISM FOR RECIPROCATING GUN

John F. Wolpert, Louisville, Ky., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1973, Ser. No. 391,701
Int. Cl. F41d *5/02*
U.S. Cl. 89—173 **1 Claim**

1. In an automatic firearm, a bolt locking mechanism comprising,

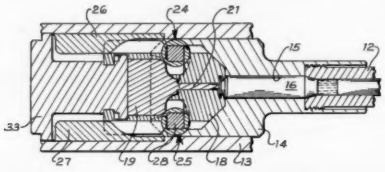
a breech housing,

a barrel extension connected to said breech housing having means for attaching a barrel on one end thereof and having locking grooves therein,

a bolt slidably mounted in said breech housing, said bolt having opposed linear slots with parallel surfaces in each side thereof,

an accelerator slidably mounted in said bolt, said accelerator having a firing pin attached thereto,

first and second roller lock assemblies each said roller lock assembly having a shaft with at lesst one pair of flat parallel surfaces on each end thereof and a roller positioned midway between said shafts ends with said flat parallel surfaces extending outwardly from each side of said roller, said parallel surfaces on each end of said shaft being slidably engageable with the parallel surfaces of said linear slots in said bolt and each said roller being engageable with said accelerator, said roller lock assemblies releasably locking said accelerator with said bolt, and

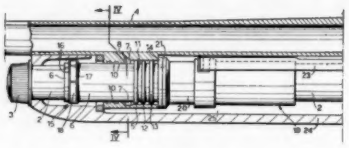


cam means attached to said breech housing engageable with said roller lock assemblies for locking said accelerator with said bolt until a round carried by said bolt reaches a battery position and said roller lock assemblies unlock said accelerator from said bolt and lock said bolt to said barrel extension and upon recoil of said bolt said cam means actuates said roller lock assemblies to unlock said bolt from said barrel extension and to lock said accelerator with said bolt.

3,848,511
GAS UTILIZATION DEVICE FOR AUTOMATIC GUNS, MORE PARTICULARLY FOR AUTOMATIC SHOTGUNS

Ernesto Zanoni, Brescia, Italy, assignor to S.p.A. Luigi Morarchi, Brescia, Italy

Filed May 21, 1973, Ser. No. 362,133
Claims priority, application Italy, May 19, 1972, 24571/72
Int. Cl. F41d *5/10*
U.S. Cl. 89—191 A **4 Claims**

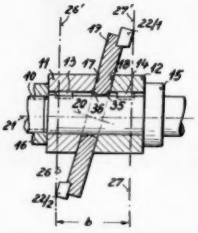


1. A gas utilization device for automatic guns, more particularly automatic shotguns of the type which comprise a cylindrical magazine extending parallel to the barrel of the gun and below the same, said device being characterized in that it comprises a cylindrical element connected to the barrel and enclosing a part of the magazine, a substantially sleeve-like element slidably and coaxially mounted on at least the said part of the magazine, an annular chamber defined between said sleeve-like element and the cylindrical element, means for sealing the gas under pressure to isolate said chamber from said part of the magazine, an annular piston connected externally and coaxially to the substantially sleeve-like element, a recoil mass slidably mounted on the magazine outside the cylindrical element adjacent said sleeve-like element, at least one communication aperture between the barrel and the annular chamber formed between the cylindrical element and the substantially sleeve-like element; the gases entering in said chamber driving the annular piston and the substantially sleeve-shaped element against the recoil mass thereby causing activation of the mechanisms of the gun.

3,848,512
MILLING TOOL FOR WORKING OF GROOVES OR SLOTS

Manfred Erhardt, Munich, Germany, assignor to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Germany

Filed May 8, 1972, Ser. No. 251,348
Claims priority, application Germany, June 25, 1971, 2131581
Int. Cl. B23c *1/02*
U.S. Cl. 90—11 A **4 Claims**



1. A disk-shaped tool for cutting on axially facing walls, comprising:

means defining a rotatable cutter spindle;

a pair of hollow sleeves mounted on said spindle and key means for locking said hollow sleeves to said spindle for rotation therewith, said hollow sleeves having opposed inclined and parallel axially facing surfaces thereon defining a gap therebetween;

a base member, the axis of which is inclined to the spindle axis, mounted on said spindle and being engaged on opposite sides thereof by said inclined and parallel surfaces on said pair of hollow sleeves, said base member being rotatable relative to said spindle means and said pair of hollow sleeves;

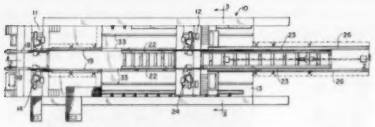
a plurality of pairs of cutting means secured to said base member adjacent the periphery thereof, each of said cutting means having at least one cutting edge thereon adapted to cut substantially in an axial direction, each of said cutting means in each pair being spaced 180° at the periphery of said base member, one of said cutting means being on one axially facing side of said base member and the other of said cutting means being on the other axially facing side of said base member, each cutting means being adapted to engage only one axially facing wall when said cutting means are in a cutting position defined by a position axially spaced the furthest from a plane extending perpendicular to the axis of said spindle means at the midpoint between said pair of cutting means, only one of said pairs of said cutting means being permitted to be positioned in said cutting position at a time; and

means for axially moving said hollow sleeves toward each other to tightly clamp said base member therebetween, said means for tightly clamping said base member between said hollow sleeves being releasable to permit a relative rotation between said base member and said spindle means to bring another one of said pairs of said cutting means into said cutting position.

3,848,513
TANDEM WHEEL TRUING MACHINE

Leonard F. Manyek, Lansing, Ill., assignor to Stanray Corporation, Chicago, Ill.

Filed May 12, 1972, Ser. No. 252,709
Int. Cl. B23c *3/04*
U.S. Cl. 90—16 **9 Claims**

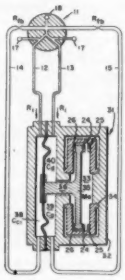


1. A tandem wheel truing installation for simultaneously truing lengthwise spaced wheels of a vehicle, said installation comprising a foundation, a first wheel truing assembly fixedly mounted on said foundation, track means for guiding said vehicle wheels, a second wheel truing assembly, track means extendable with said track means on said first wheel truing assembly for providing a continuous track along said foundation, means mounting said second wheel truing assembly for lengthwise movement relative to said first wheel truing assembly, and means for maintaining said second wheel truing assembly in a selective stationary position relative to said first wheel truing assembly, whereby said first and second wheel assemblies are spaced complementary to the lengthwise spacing of the vehicle wheels to be trued.

3,848,514
FLUIDICALLY CONTROLLED PNEUMATIC TO MECHANICAL CONVERTERS

Happy H. Unfried, Los Angeles, and John F. Cogger, Northridge, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 138,413, April 29, 1971, Pat. No. 3,735,707. This application Feb. 21, 1973, Ser. No. 334,507
Int. Cl. F15b *13/042*; **F01l** *25/04*
U.S. Cl. 91—3 **7 Claims**

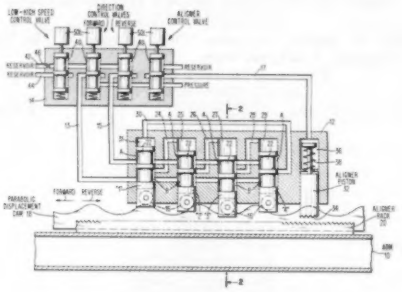


1. A pneumatic to mechanical converter comprising:
a cylindrical housing having end covers thereon;
a first set of ratchet teeth attached to the internal surface of one of said end covers and arranged concentrically of the axis of said cylindrical housing;
a second set of ratchet teeth attached to the internal surface of the other of said end covers and arranged concentrically of the axis of said cylindrical housing;
a circular disc concentrically arranged within said cylindrical housing for axial movement therein, said disc having oppositely disposed faces each confronting the internal surface of one said end covers of said cylindrical housing;
a fluid amplifier;
means for operatively coupling said fluid amplifier to said disc for axially oscillating said disc within said cylindrical housing;
a third set of ratchet teeth attached to one of said faces of said circular disc and arranged for engagement with said first plurality of teeth; and
a fourth set of ratchet teeth attached to the other of said faces of said circular disc and arranged for engagement with said second plurality of teeth;
the cross-section of each set of ratchet teeth being such that alternating engagement between the first and third set of ratchet teeth and between the second and fourth set of ratchet teeth causes relative rotation in incremental steps between said cylindrical housing and said circular disc.

3,848,515
LINEAR HYDRAULIC DRIVE SYSTEM

Bayard G. Gardineer, Patterson, and Hugo A. Panissidi, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,403
Int. Cl. F15b *15/26*; **F01l** *21/02*
U.S. Cl. 91—184 **13 Claims**



1. A linear hydraulic motor comprising a cyclical linear cam drive rack,
a motor block containing a plurality of hydraulically actuated pistons, valve assemblies connected directly to and forming an extension of said valve assemblies being interconnected to sequentially operate said pistons for effecting relative movement between said motor block and said drive rack selectively in either direction, said pistons being adapted to engage said drive rack,
means for mounting said drive rack eccentrically on a linear arm, said arm being fixedly journaled with respect to said motor block whereby the pressure of said pistons on said rack causes a torsional force to be applied to said linear arm rotationally locking same in said journaling means,
journal means for constraining the relative motion of said motor block to a path parallel to said drive rack and means for controlling the flow of hydraulic fluid to said motor block to initiate movement of said motor.

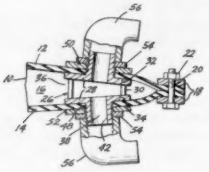
3,848,516
HIGH CAPACITY INFLATABLE HOSE FITTING

Henry H. Merriman, 751 W. Washington Ave., Jackson, Mich. 49203

Filed Oct. 2, 1972, Ser. No. 294,178
Int. Cl. F16j *3/00*
U.S. Cl. 92—92 **8 Claims**

1. In an inflatable hose power unit, a hose having opposed, spaced flattened portions and ends, means closing the ends of said hose, a hole defined in each portion, said holes being in

opposed relation, a fitting having a generally flat internal member having a periphery and opposite sides, hose mounting means defined on each side of said internal member for attaching said internal member to the opposed hose portions, said internal member being located within said hose intermediate said portions and said hose mounting means extending through said holes, an exteriorly accessible passage defined in said internal member, and port means open to the interior of said hose and communicating with said passage and said internal member periphery.

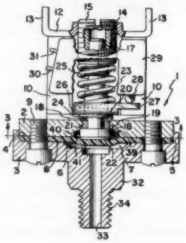


3,848,517

PRESSURE SENSITIVE DEVICE FOR OPERATING A SWITCH OR THE LIKE

Earle G. Hawke, Clarkston, Mich., assignor to The Nason Company, Clarkston, Mich.

Filed Aug. 28, 1972, Ser. No. 284,033
Int. Cl. F01b *19/00*; **F16j** *3/00*
U.S. Cl. 92—101 **6 Claims**



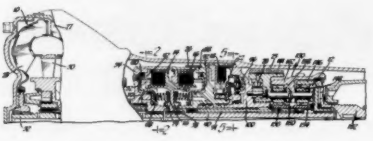
1. A pressure sensitive device comprising a body having walls defining a chamber; a flexible diaphragm spanning said chamber; pressure fluid conduit means in communication with said chamber on one side of said diaphragm; a bore in communication with said chamber on the opposite side of said diaphragm; a reciprocable piston extending through said bore and terminating at and abutting said opposite side of said diaphragm, said piston being movable in response to the introduction and exhaust of pressure fluid to and from said chamber via said conduit means; a counterbore surrounding said bore and being of less depth than that of said bore; an annular cushioning member constantly occupying said counterbore and encircling said piston, said cushioning member spanning the distance between said piston and the periphery of said counterbore and having a thickness greater than the depth of said counterbore whereby said cushioning member engages said diaphragm and forms a resilient bridge for the latter between said piston and the periphery of said counterbore; and means for limiting movement of said piston in a direction outwardly of said chamber a distance greater than the depth of said counterbore.

3,848,518

SHEET METAL PISTON FOR TRANSMISSIONS AND METHOD OF MAKING A PISTON ASSEMBLY

Ames R. Martin, Ypsilanti, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 14, 1972, Ser. No. 288,905
Int. Cl. F01b *31/00*; **F16j** *1/10*
U.S. Cl. 92—107 **7 Claims**



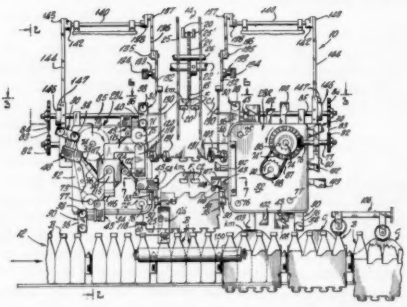
1. A piston assembly for selectively engaging a friction drive establishing device comprising an annular thin wall shell having inner and outer rims, an annular channel formed in the face of said shell bounded by a cylindrical wall disposed adjacent to said outer rim, contact means for a friction drive establishing device operatively disposed in said channel, said contact means comprising a thin wall metallic member with free end portions and curved into a circular member, said contact means being resiliently constrictable into a smaller circular configuration for installation into said channel and being provided with radially extending projections thereon which contact said cylindrical wall to yieldably retain said contact member in said shell, and said contact means having surface means on one face thereof for engagement with a friction drive establishing device.

3,848,519

PACKAGING MACHINE

Robert H. Ganz, 8 Ridge Crest Rd., Saddle River, N.J. 07458

Filed May 14, 1973, Ser. No. 360,155
Int. Cl. B31b *1/76*
U.S. Cl. 93—53 SD **30 Claims**



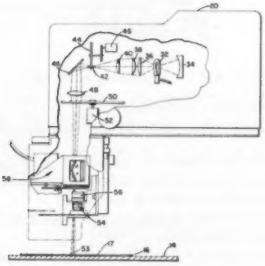
1. An apparatus for opening a folded tubular packaging container of the type which comprises a plurality of hingedly connected wall panels adapted to be unfolded by hinging in opposite directions the panels adjacent fold lines at opposite ends of the container, said apparatus comprising means for advancing successive containers in folded condition along a predetermined path with the container end fold lines extending in the direction of travel, panel gripping head assemblies, means for supporting said panel gripping head assemblies in paired relation for travel along opposite sides of the path of said container advancing means which supporting means

comprises conveyor members mounted for travel in a path which extends in part along the path of travel of the containers, means on said gripping head assemblies for engaging in gripping relation with panels adjacent said container end fold lines which panels are disposed on opposite side faces of the container, means for moving said gripping head assemblies into position for engaging with opposite faces of each successive folded container while each said container is advancing, means for pivoting said panel gripping heads in opposite directions about axes extending in the direction of travel so as to hinge the panels which are gripped in opposite directions about said end fold lines and thereby open the container into tubular form.

3,848,520
LINE DRAWING PHOTOEXPOSURE DEVICE WITH IMAGE ROTATING MEANS

Ronald B. Webster, Melrose, and Leonard G. Rich, West Hartford, both of Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed July 24, 1972, Ser. No. 274,797
Int. Cl. G03b *29/00*
U.S. Cl. 354—4 **6 Claims**

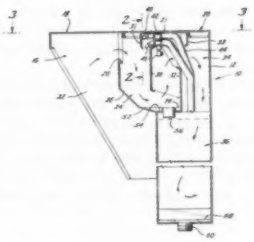


1. A photoexposure mechanism for exposing lines on a photosensitive surface by means of a light spot moved thereover, said mechanism comprising means defining a supporting surface for supporting a piece of material having a photosensitive surface, and a photoexposure device supported for movement relative to said supporting means in a plane generally parallel to said supporting surface, said photoexposure device comprising an aperture, means for illuminating said aperture, and an optical imaging system for forming an image of said aperture on said photosensitive surface which image is a substantially undistored optical reproduction of said aperture and constitutes the aforesaid spot which is moved over said photosensitive surface to expose lines thereon as a result of movement of said photoexposure device relative to said supporting surface, the path of light rays through said optical imaging system including at least one zone of non-parallel light rays, and an image rotator capable of rotating said non-parallel light rays, said image rotator being located in said zone of non-parallel light rays for rotating said image relative to said photosensitive surface, said imaging system comprising a lens located between said aperture and said photosensitive surface and said image rotator being located between said aperture and said lens, said image rotator comprising a mirror assembly defining an odd number of planar reflecting surfaces encountered successively by a light ray passing through said assembly and arranged to deflect such a ray traveling along the optical axis of said rays first away from and then eventually back to a straight line colinear with said optical axis as said optical axis enters said mirror assembly, and means for rotating said mirror assembly about said given straight line, said photoexposure device also including a first support member to which said mirror assembly is fixed, a second support member, means attaching said first support member to said second support member and permitting said first support member to be manually adjusted relative to said second member to shift said first support member toward and away from said given straight line along a first line perpendicular to said straight line and to vary the inclination of said first support member relative to said straight line in the plane defined by said first line and said given straight line, a third support member, means attaching said second support member to said third support member and permitting said second support member to be manually adjusted relative to said third member to shift said second support member toward and away from said given straight line along a second line perpendicular to both said given straight line and first line and to vary the inclination of said second support member relative to said given straight line in the plane defined by said second line and said given straight line, and a main frame, said means for rotating said mirror assembly including means mounting said third support member to said main frame for rotation relative to said main frame about said given straight line.

3,848,521
VENTILATING SYSTEM

Roy R. King, Houston, Tex., assignor to Industrial Industries, Inc., Houston, Tex.

Filed May 31, 1973, Ser. No. 365,563
Int. Cl. F23j *11/02*
U.S. Cl. 98—115 K **7 Claims**



1. A ventilating system for drawing air from above cooking ranges and the like, comprising,

a. a vertically oriented, upstanding housing adapted for bottom mounting to a floor,

b. a hood member secured to the housing (a) for collecting air for passage through the housing (a), the top of the hood member being substantially coplanar with the top of the housing thereby forming a counter,

c. an entry chamber within the upper portion of the housing (a) adjacent the hood member (b) with a port for reception of air from the hood member (b), said chamber having

i. a plurality of vertically oriented baffles each extending substantially the width of the housing (a) to impart changes in flow pattern of the air,

ii. nozzle means within the chamber (c) for imparting a spray of water across substantially the width of said chamber to extract materials entrained in the air, and iii. drain means in the chamber (c) for removing water and materials that collect in the bottom of said chamber,

d. an expansion chamber within the lower portion of the housing (a) to receive air from the entry chamber (c) and slow its movement, the chamber (d) having greater volume than the chamber (c),

e. a duct providing pneumatic communication between the chambers (c) and (d), and

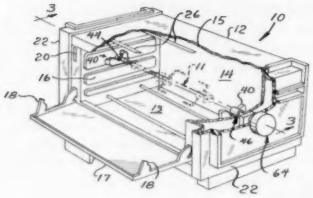
f. an air exhaust duct communicating with the expansion chamber.

3,848,522

ROTISSERIE SPIT MOUNTING MEANS

William F. Trelc, Boonville, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed July 10, 1972, Ser. No. 270,445
Int. Cl. A47j *37/04*
U.S. Cl. 99—421 H **8 Claims**



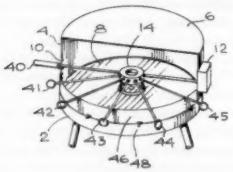
1. For use in a broiler have spaced stationary end walls, a spit mounting arrangement comprising the combination of a spit of length less than the spacing between the end walls, opposed supports inwardly spaced from the end walls and defining thereon concave trough sections adapted to receive and support the spit near the opposite ends thereof, rotatable power means located adjacent but axially spaced from and aligned with one spit end as the spit is on the supports, a shaft rotatably keyed to the power means and axially movable relative thereto between axially spaced operative positions, a drive coupling on the shaft adapted to become rotatably keyed with the adjacent one spit end in one operative shaft position and to be separated from said spit end in a second operative position, a control element on the shaft exposed on the side of the end wall remote from the spit, the control element being axially keyed to the shaft but being free to rotate relative to the shaft, and faces on the control element and adjacent end wall engaged upon partial rotation of the control element on the shaft relative to the end wall to releasibly lock the control element in the second operative position where the coupling and spit are separated.

3,848,523

ROTARY BARBECUE DEVICE

Laszlo Galisz, 147 Huston St., Sherman Oaks, Calif. 91403, and Miklos Vali, 5723 Harold Way, Hollywood, Calif. 90028

Filed May 29, 1973, Ser. No. 364,862
Int. Cl. A47j *37/04*
U.S. Cl. 99—421 H **10 Claims**



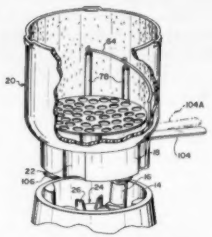
1. A portable, rotary barbecue attachment device for use with and actuation by a motorized barbecue spit comprising:
a housing; and
a plurality of hollow, mutually rotatable members horizontally disposed within said housing and extending outwardly of said housing; one of said hollow rotatable members being a driving member and the other hollow rotatable members being driven members,
said hollow driving member being adapted to cooperatively engage and to be rotated by said motorized barbecue spit and the hollow driven members being adapted to cooperatively engage and rotate food holding skewers.

3,848,524

APPARATUS FOR PEELING VEGETABLES

Walter J. Semrow, Manchester, Conn., assignor to Dynamics Corporation of America, New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,125
Int. Cl. A23n *7/02*
U.S. Cl. 99—631 **7 Claims**



1. A vegetable peeler comprising,
a power unit including a drive shaft driven at high speed by a motor,
a container member removably mounted on said power unit journalling a driven shaft on its bottom wall and having an upstanding wall surrounding said shaft,
a disengageable clutch means to interengage said shafts in interdriving relationship,
a horizontally disposed concave scraper disk mounted on the upper end of said driven shaft with the concavity disposed upwardly and having holes through the disk defining scraping edges on the trailing walls of the holes, and
tumbler means above said disk and circularly inclined upwardly in the direction of disk rotation along and inwardly spaced from a portion of said upstanding wall to tumble vegetables of various sizes located on scraper disk and contacting said tumbler means,
said tumbler means comprising a curved member defining a helical ledge bordering the scraper disk and overhanging the space below it into which peelings may be discarded by the peeling disk.

3,848,525

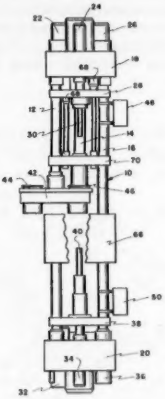
CONTROL MEANS FOR OPPOSED RAMS OF A PRESS

Francis Joseph Kent, Wallingford, and Seymour E. Steinbrook, Wynnewood, both of Pa., assignors to Wean United, Inc., Pittsburgh, Pa.

Filed Aug. 30, 1973, Ser. No. 393,237
Int. Cl. B30b *15/18*
U.S. Cl. 100—48 **3 Claims**

1. In a press having opposed rams and means for causing said rams to advance towards each other during their working strokes,
a control means including a set of at least two movement detecting means for each ram arranged to monitor the movements of their associated rams,
said detecting means forming zones of variable lengths, and means for coordinating said sets of movement detecting means in a manner to interrupt movement of one of the

rams in the event an undesirable degree of travel occurs in one ram as compared with the other until the lagging



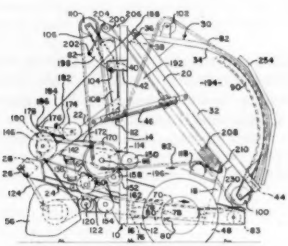
ram reaches a desired synchronized position to the interrupted ram.

3,848,526

HAY ROLL FORMING MACHINE

Aquila D. Mast, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Apr. 24, 1973, Ser. No. 353,942
Int. Cl. A01d *39/00*; **B30b** *5/06*, *9/00*
U.S. Cl. 100—88 **5 Claims**



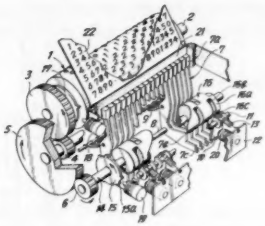
1. A mobile hay roll-forming machine comprising in combination, a base frame having wheels for mobility, lower flexible propelling means extending transversely across said base frame, means to drive said propelling means to move the upper course across said base frame, upper endless flexible apron means, upper frame means supporting said upper apron means to position the lower course thereof above said lower propelling means and spaced therefrom, means to drive said upper apron to move the lower course thereof in opposition to said lower propelling means to form a coiled roll of hay and the like therebetween by engagement with said opposing movable means, means adapted to elevate the rearward portion of said upper frame means relative to said base frame to permit discharge of a formed roll of hay and the like from the rearward end of said machine, and means interconnected to said drive means for said upper apron and said frame to automatically discontinue the driving of said upper apron when said rearward portion has been elevated while the driving means for said lower propelling means continues to move the same rearwardly to effect discharge of said roll of hay and the like.

3,848,527

PRINTER WITH ROTARY ROLL COLUMN SELECTING MEANS

Shohachi Nihira, Tokyo, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed May 2, 1973, Ser. No. 356,472
Claims priority, application Japan, May 4, 1972, Japan 47-44378
Int. Cl. B41j *9/32*
U.S. Cl. 101—93 C **3 Claims**



1. A printer having a printing station comprising

a type wheel having type characters arranged about the periphery in a plurality of columns, means including a shaft to rotate said type wheel to advance said columns through said station,

means coupled to said shaft to index a recording sheet through said station once after each passage of said columns through said station,

means for printing the type characters on the recording sheet,

type selecting means including electrical control means for selecting a given type character from each of the columns of said type wheel, and

column selecting means rotating at a predetermined ratio relative to the shaft of said type wheel to select one column from a group of adjacent columns, said ratio corresponding to the number of characters in each column, said column selecting means being functionally coupled to said type selecting means and comprising a rotary roll having a number of actuating segments about its periphery corresponding to the number of columns in said group, said column selecting means operable to select a single column from the group in each actuating segment, whereby each column is selected once during each revolution of said roll,

said type selecting means including a common electromagnetic means for said group of adjacent columns, said electromagnetic means being controlled by said electrical control means for comparing a given type character with the type position of said type wheel and being actuated when said given character is in printing position in said station, and said type printing means being actuated only when both said column selecting means and said electromagnetic means are simultaneously actuated, whereby when the common electromagnetic means is operated by said control means, the printing means operates to print a character from only one column of said group at any one time, as determined by the segment of said roll which is in actuating position.

3,848,528

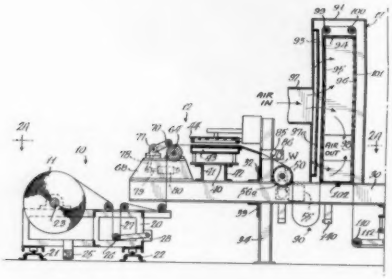
MULTI-STATION PRINTING SYSTEM

Robert R. Seedorf, Barrington, Ill., assignor to The Roy M. Moffitt Company

Filed Sept. 25, 1972, Ser. No. 291,964
Int. Cl. B41f *15/10*, *15/24*
U.S. Cl. 101—115 **2 Claims**

1. A multi-station screen printing system with a screen printer at each of the stations for printing on a section of

continuous web while said web is stationary at a station; means associated with each of said stations for feeding and advancing the web into said station and stopping the web in response to a registry mark thereon and independently of web feeding means at other stations including, a drive roller beyond the screen printer, means for driving said drive roller at either a fast speed or a slow speed, intermittently operable means in advance of the screen printer for holding the web, and control means including means at the station for successively scanning a registry mark on the web for first reducing the drive roller from fast speed to slow speed and then upon a second scanning of said registry mark stopping the drive roller and activating the web holding means to hold the web in position for



printing; and means for permitting independent operation of the screen printer at a station on a stationary web independently of the operation at another station including a web loop between said stations, and means for detecting the size of said loop and controlling the web feeding means at the next station beyond the web loop to maintain the loop to a predetermined dimension, said web holding means including a pair of rotatable rollers engaging the web therebetween and a relay operated brake for stopping rotation of said pair of rollers, and said drive roller is a vacuum roller which yieldably holds the web thereagainst whereby stopping of the web by said holding means is permitted by movement between the web and the vacuum roller.

3,848,529

INK LEVEL CONTROL SYSTEM

Harold W. Gegenheimer, Darien; Walter A. Siebein, Redding, and George J. Hancock, Milford, all of Conn., assignors to Baldwin-Gegenheimer Corporation, Stamford, Conn.

Filed Oct. 24, 1972, Ser. No. 299,894
Int. Cl. B41l *27/08;* **B41f** *31/06*
U.S. Cl. 101—363 **5 Claims**

1. A mechanism for maintaining the level of ink in an ink fountain at a predetermined minimum level comprising:

a. an ink fountain containing a quantity of ink,

b. a fountain roller extending into said ink fountain and adapted to remove ink from said ink fountain in small amounts,

c. wave making means mounted adjacent to said ink and extending below the level of ink in said ink fountain,

d. means for moving said wave making means longitudinally along the length of said ink fountain to form a wave of ink which extends above the level of ink in said ink fountain, said wave making means including switch activating

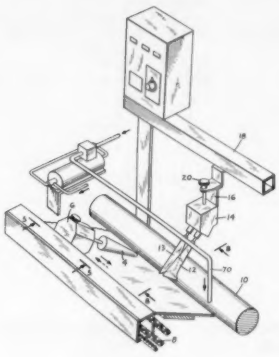
e. an ink supply means containing a supply of ink for feeding to said ink supply,

f. a control means operatively associated with said ink supply means, said control including means to permit ink feeding and means to prevent ink feeding,

g. switch means operatively associated with said control means, said switch means being positioned to be activated by said switch activating means as said wave making means moves longitudinally of said ink fountain and being adapted to cause ink feed,

h. ink sensor means mounted adjacent to said ink fountain, said ink sensor means including a first member which extends into said ink fountain to a position above the level of ink in said ink fountain,

i. said first member of said ink sensor means being operatively associated with said control means and said means for preventing ink feeding,



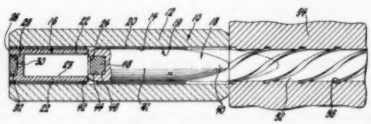
j. said control means being adapted to feed ink in small measured quantities to said ink fountain unless the wave of ink caused by said ink agitator is sufficiently high to activate said first ink sensor member to thereby prevent further ink feed.

3,848,530

SHOT OBTURATION SYSTEM FOR FULLY TELESCOPED CASELESS AMMUNITION

Roy D. Plumer, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed May 15, 1970, Ser. No. 37,523
Int. Cl. F42b *5/18, 9/16*
U.S. Cl. 102—38 **4 Claims**



1. In a round of telescoped caseless ammunition:

a. a tubular propellant charge comprised of first and second end portions and an axial bore therebetween, said first end portion having a radial wall with an outwardly extending axial pocket therein and an axial opening communicating between said pocket and said bore;

b. a projectile having nose, side, and aft sections and affixed to said bore at said side section, said sections located within said bore between said first and second end portions; and

c. first and second primer means affixed respectively in said pocket of said first end portion and to said aft section of said projectile, whereby detonation of said first primer

initiates a flash wave that propagates through said axial opening of said pocket and said axial bore of said propellant to detonate said second primer means and whereby the detonation of said second primer means advances said nose section of said projectile beyond said first end portion of said propellant prior to substantial ignition of said propellant.

3,848,531

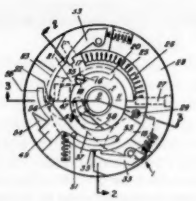
SELF-DESTRUCT FUZE

George P. Mellen, Wayzata, Minn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 30, 1973, Ser. No. 411,107

Int. Cl. F42c *9/04*

U.S. Cl. 102—70 R **9 Claims**



1. A self-destruct fuze for a spin-type projectile, comprising:

a housing including a hollow cylindrical body adapted to be mounted in said projectile with its longitudinal axis coincident with the spin axis of the projectile, and a cover plate attached to the forward end of said body,

a primary lead tube containing an explosive primary lead axially mounted in said body, at least the rear end of said tube being open for exposing said primary lead to an explosive charge in said projectile,

a firing arming rotor rotatably mounted on said tube,

a second arming rotor rotatably mounted on said first rotor, said rotors having safe, armed and fired positions,

means releasable during launch for locking one rotor against rotation relative to said housing prior to launch, spin-actuated means for locking said rotors against relative rotation prior to spin decay in said safe and armed positions,

springs means normally biasing said second rotor toward said safe and fired positions,

spin-actuated means for rotating said first rotor against said spring means from said safe position to said armed position after release of said releasable locking means,

an explosive detonator carried by said second rotor,

a firing member mounted in said housing in position to be struck by said detonator when said spring means rotates said second rotor from said armed position to said fired position after release of said second rotor from said spin-actuated locking means during spin decay, and

an explosive lead in said first rotor aligned with said detonator and said primary lead when said detonator is in said fired position.

3,848,532

PROJECTILE AND CARTRIDGE ARRANGEMENT

David D. Abbott, Deer Meadow Farm, Md., assignor to AAI Corporation, Cockeysville, Md.

Division of Ser. No. 183,487, Sept. 24, 1971, Pat. No. 3,776,137. This application Apr. 10, 1973, Ser. No. 349,710

Int. Cl. F42b *11/18, 13/36*

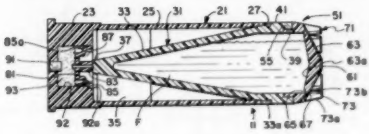
U.S. Cl. 102—87 **20 Claims**

1. A projectile for firing from a cartridge and rupturable on target impact after firing from a cartridge, comprising

a front portion having a frontal wall and a guard around said frontal wall

a cavity formed in said projectile for holding a flowable dispersable charge desired to be dispersed on target impact after said projectile having been fired from a cartridge,

the forward end of said cavity being bounded by said frontal wall, which frontal wall is rupturable to release such a



charge from said cavity when the projectile strikes a target at a velocity consistent with its having been fired from a cartridge,

said guard having sufficient impact resistance to provide a measure of protection against the inadvertent rupture of the frontal wall during lower velocity handling frontal impact shocks, including dropping from hand-held positions of the projectile above a hard ground surface.

3,848,533

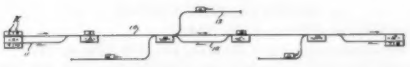
NON-STOP RAPID TRANSIT SYSTEM

Harlow B. Grow, 16530 Chattanooga Pl., Pacific Palisades, Calif. 90272

Filed Mar. 30, 1973, Ser. No. 346,602

Int. Cl. B61k *1/00*

U.S. Cl. 104—18 **18 Claims**



1. A two way non-stop rapid mass transit system comprising;

a single main line extending between opposite terminals and having at least one enroute station therealong, and at least three individually operable cars adapted to be releasably coupled one to the other, a pair of said cars with its complement of passengers being coupled together and operated to depart from each terminal and progress in opposite directions along said main line, one of said cars with its complement of passengers being loaded at said enroute station and operated to depart therefrom and progress along said main line in the direction of and at a speed less than the foremost of the said pair of cars traveling in the same direction, the rearmost of the said pair of cars in each instance being uncoupled from said foremost car and operated to stop at said enroute station for exchange of passengers, the foremost car in each instance passing said enroute station non-stop and being coupled to said other of said cars and operated for continued progress to the other terminal, and a parallel track with entry and reentry switches to said main line extends between enroute stations at passing points between terminals for simultaneous progress of pairs of cars therebetween progressing in opposite directions.

3,848,534

WIGGLE TRACK SECTION

Richard F. Beck, Olympia Fields, and Louis T. Cerny, Tinley Park, both of Ill., assignors to Elgin, Joliet and Eastern Railway Company, Chicago, Ill.

Filed Mar. 22, 1973, Ser. No. 343,901

Int. Cl. B61k *7/00*

U.S. Cl. 104—26 A **15 Claims**

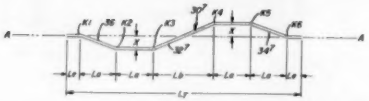
1. In combination, with a rolling rail vehicle of the type having wheels for riding on a track and rolling free of the

engine, such as in a railroad classification yard, the improvement which comprises:

a first curved wiggle section having generally parallel rails connected to said track as a continuation of said track;

said first curved wiggle section bending away from one side of said center line of said track and then bending back to said center line of said track;

a reverse curved wiggle section having generally parallel rails connected to said first curved wiggle section as a continuation of said first curved wiggle section;



said reverse curved wiggle section bending away from the other side of said center line of said track and then bending back to said center line of said track;

so that the pressure of the flanges of the wheels of said vehicle on the rails of said track section; the skewing of the trucks of said vehicle; and the varying of the location of the pressure of the bearings of said vehicle on the axle of said vehicle; retard the acceleration of said vehicle while said vehicle moves through said wiggle section.

3,848,535

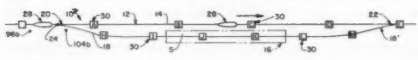
RAPID TRANSIT SYSTEM

Bruce Mitchell, Sylmar, Calif. 83450

Continuation-in-part of Ser. No. 140,959, May 6, 1971, abandoned. This application Jan. 13, 1972, Ser. No. 180,769

Int. Cl. B61b *13/10*

U.S. Cl. 104—88 **8 Claims**



1. A rapid transit system comprising:

guide line network;

a car movable throughout said network, said car being fixedly connected to a tow bar, said tow bar being movably supported on said guide line network, said tow bar being of a car length substantially greater than the length of said car;

drive means connected to said guide line network for moving said car along said guide line network, said drive means including uniformly spaced drive motor units, the length of said tow bar to be sufficient to extend between any adjacent sets of said drive motor units, each of said drive motor units being activated upon the approach of said tow bar, said drive motor units do not move with said car but include a plurality of separate drive motors; and said drive motors being two in number within a single drive motor unit, each of said drive motors being spaced above said guide line network, said motors of a single unit being hinged together on a common axis whereby said motors are continuously biased by gravity toward engagement with said tow bar.

3,848,536

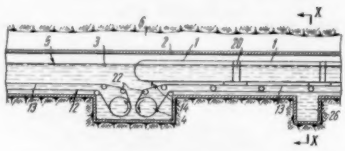
METHOD OF CONVEYING GOODS IN CONTAINERS ALONG A TUBE LINE

Zinovy Zinovievich Chukhanov, ulitsa Obrucheva 6, korpus 6, kv. 352; Zinovy Fedorovich Chukhanov, ulitsa D. Ulyanova 3, kv. 40; Vladimir Illarionovich Panov, ulitsa Molostovykh 13, korpus 4, kv. 87; Anatoly Mikhailovich Nikolaev, ulitsa Stroitelei, 6, korpus 6, kv. 43; Sergei Andreevich Tsuprov, B. Vuzovsky pereulok, 1, kv. 36, and Ivan Vasilievich Lyashenko, Lesnaya ulitsa, 45, kv. 89, all of Moscow, U.S.S.R.

Filed Aug. 23, 1973, Ser. No. 390,946

Int. Cl. B61b *13/10*

U.S. Cl. 104—147 R **4 Claims**



1. A method of conveying cargo in containers comprising forming a pipeline filled with a liquid to a given level, coupling a plurality of loaded containers floating freely in the liquid for movement in trains from an inlet to an outlet of said pipeline, advancing said train in the pipeline by means of a plurality of conveyors arranged along the length of the pipeline and provided with traction members adapted to transfer said containers, from one traction member to the next, and maintaining said given liquid level constant along the entire length of the pipeline by draining and introducing liquid at respective points located at predetermined distances from one another along said pipeline where said given level is expected to rise or drop.

3,848,537

TRANSPORTATION SYSTEM

Frederic Rodot, 6A, avenue de e'ouche 21, Dijon, France

Filed Dec. 30, 1971, Ser. No. 214,072

Int. Cl. B61b *13/00*

U.S. Cl. 104—154 **14 Claims**

1. A transportation system comprising:

an upwardly open channel;

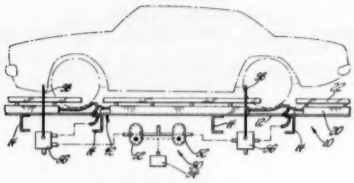
a pair of parallel guide tracks flanking said channel;

a vehicle provided with wheels rolling on said guide tracks, said vehicle being provided with blade means depending into said channel, said blade means including at least one blade mounted pivotally on said vehicle;

control means for swinging said blade between an effective position and a substantially ineffective position; said control means including abutment means adjacent said guide tracks operatively engageable with said blade upon displacement of said vehicle past a predetermined location; and

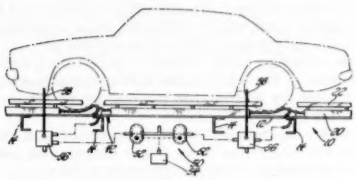
fluid-circulation means for maintaining a continuous liquid flow in said channel, said blade means dipping into the liquid for entraining the vehicle in the direction of flow.

3,848,538
CONVEYOR ASSEMBLY
Leonard J. Hondzinski, Rochester, Mich., assignor to Nuprin Corporation, Rochester, Mich.
Filed July 23, 1973, Ser. No. 381,376
Int. Cl. B61b *13/00*
U.S. Cl. 104—155 **5 Claims**



1. A conveyor assembly comprising; a fluid conduit expansible in response to fluid pressure therein and having first and second ends, a support means for supporting said conduit, said conduit being attached to said support means, said conduit having a fluid outlet adjacent said first end thereof, said conduit having an inlet adjacent said second end thereof, the terminal portion of said second end of said conduit being movably supported by said support means.

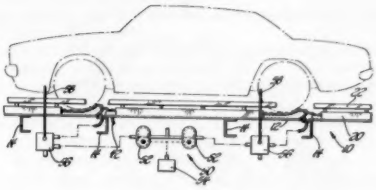
3,848,539
CONVEYOR ASSEMBLY
Leonard J. Hondzinski, Rochester, Mich., assignor to Nuprin Corporation, Rochester, Mich.
Filed July 23, 1973, Ser. No. 381,378
Int. Cl. B61b *13/00*
U.S. Cl. 104—155 **8 Claims**



1. A conveyor assembly comprising; an elongated support means, a fluid conduit expansible in response to fluid pressure therein and disposed along said support means, beam means extending transversely of said support means for supporting same, fluid pipe means extending along said support means on at least one side thereof and supported on said beam means, said fluid pipe means being in fluid communication with said conduit.

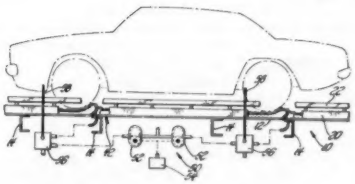
3,848,540
CONVEYOR ASSEMBLY
Leonard J. Hondzinski, Rochester, Mich., assignor to Nuprin Corporation, Rochester, Mich.
Filed July 23, 1973, Ser. No. 381,379
Int. Cl. B61b *13/00*
U.S. Cl. 104—155 **6 Claims**

1. A conveyor assembly comprising; a conduit having a cross section which is endless, a flexible and expandable tube disposed within said conduit, said tube being smaller than said conduit in the unexpanded condition and being stretchable to expand to conform to the endless interior of said conduit, said



conduit being nonstretchable for limiting the expansion of said tube.

3,848,541
CONVEYOR BELT
Leonard J. Hondzinski, Rochester, Mich., assignor to Nuprin Corporation, Rochester, Mich.
Filed July 23, 1973, Ser. No. 381,377
Int. Cl. B61b *13/00*
U.S. Cl. 104—155 **3 Claims**

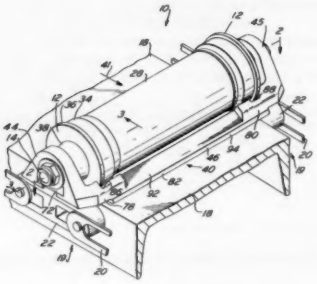


1. A conveyor assembly comprising; a plurality of conduits sequentially disposed along a path and expansible in response to fluid pressure therein, each of said conduits including fluid inlet means and fluid outlet means, fluid flow regulator means for supplying a substantially equal volume of fluid per predetermined period of time to each of said fluid inlet means whereby conveyed articles move at equal speeds regardless of differences in weight.

3,848,542
SAFETY SHIELD
Thomas Schied, Philadelphia, and Edward J. Wright, Warrington, both of Pa., assignors to Sherman Car Wash Equipment Co., 600 W. Broad St., Palmyra, N.J.
Filed Oct. 15, 1973, Ser. No. 406,739
Int. Cl. B61b *13/00*
U.S. Cl. 104—172 B **8 Claims**

1. A safety shield for a conveyor dolly of the type which comprises two spaced links with upwardly extending lugs, said lugs supporting a shaft on which means for rolling engagement with the wheel of an automobile is mounted, said safety shield comprising first and second ears and a guard, each of said ears being generally U-shaped and comprising two legs which are for overlying the lugs, said legs defining a first slot therebetween for receiving the shaft on which the roller is supported,

said first slot being closed at at least one end, and said guard comprises an elongated member, said member being supported by said ears so that it extends along said means for rolling contact.

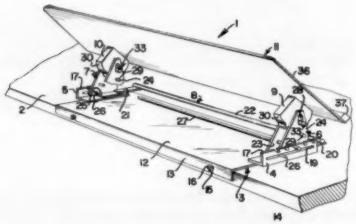


3,848,543

ADJUSTABLE SHELF STRUCTURE

Richard L. Johnston, Shawnee, Kans., assignor to Richard L. Johnston, Shawnee and Sam L. Ruben, Mission, both of, Kans.

Filed Mar. 26, 1973, Ser. No. 344,880
Int. Cl. A47f *5/12*
U.S. Cl. 108—5 **1 Claim**



1. An adjustable shelf structure comprising:

a. a base frame and means thereon for mounting said frame on a supporting surface, said base frame having a pair of spaced elongated structural members each with a forward end and a rear end and extending horizontally and upwardly and each having an upper horizontally extending edge with a plurality of spaced notches therein, said elongated structural members having an elongated horizontally extending way therein,

b. an upper frame located above said base frame, and including a pair of spaced brackets, said spaced brackets each having an upstanding flange,

c. a first rod mounted on each of said flanges and projecting into a respective base frame way, a second rod mounted on each of said flanges and spaced above and rearwardly offset from said first rod and adapted to be selectively received in a respective one of the notches in said upper edges,

d. a shelf member positioned above said upper frame, said shelf member having a pair of spaced depending portions respectively received adjacent said flanges, said depending portions each having an arcuate lower edge with a plurality of circumferentially spaced notches therein,

e. a rod projecting from each of said depending portions, said brackets each having an upwardly extending way therein receiving said depending portion rod, and

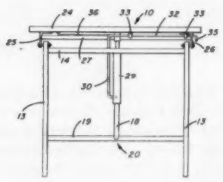
f. a stop member mounted on each of said bracket flanges and received in a respective one of the notches of said depending portions.

3,848,544

DRAFTING TABLES

James Bruce Douglas, 5840 McLynn Ave., Montreal 29, Quebec, Canada

Filed Jan. 18, 1973, Ser. No. 324,839
Int. Cl. A47f *5/12*
U.S. Cl. 108—6 **3 Claims**



1. A drafting table comprising:

a. a support frame including two upright front leg members and a cross member rigidly connecting upper portions of said leg members and single rear leg means extending downwardly and rearwardly from said cross member in an operative position thereof,

b. a single normally vertical pivot connecting said single rear leg means to said cross member, the upper forward end of said rear leg means being mounted underneath said cross member and said rear leg means being dimensioned to allow said rear leg means to be folded by movement about said pivot into a position parallel to the front leg members and wholly within the outer boundaries of the front leg members and said cross member,

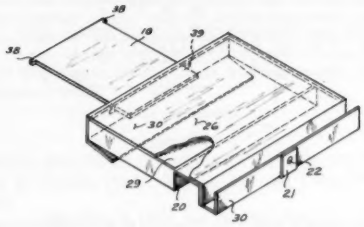
c. means defining a series of notches spaced along said rear leg means so that said notches have openings rearwardly of the rear leg means when the rear leg means is in its operative position,

d. board means mounted on the support frame by pivot means allowing tilting of the board means about a horizontal axis adjacent a front edge of the board means, said pivot means allowing adjustment of the angular position of the board means to a variety of sloping operative positions and also allowing folding of said board means into a position close to and parallel to said front leg members, and

e. adjustment means mounted on said board means for adjustment thereof relative to said rear leg means, said adjustment means including a rod having an upper shaft portion extending horizontally under the board means, said upper shaft portion being positioned close to the board means and rotatably mounted thereon, said rod having a lever portion extending downwardly from one end of said shaft portion and having a lower horizontal portion at its lower end, said lower horizontal portion being suitable for engagement with the notches of said rear leg means when the board means and the rear leg means are in their operative positions, and said rod having handle means at the other end of said shaft portion for rotating said shaft portion to control engagement of the lower horizontal portion with said notches, said lever portion being disengageable from said notches and pivotal against the underside of said board means for folding of the table,

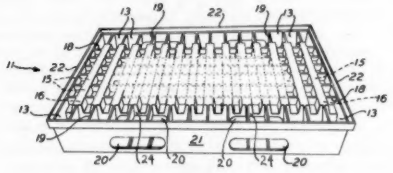
whereby said table can be folded by disengagement of the lower horizontal rod portion from the notches, folding of the rear leg means parallel to the plane of the front leg members, pivoting of the rod lever portion against the board means and then pivoting of the board means flat against the leg members.

3,848,545
DRAWER FOR FOLDING TABLE
Herbert S. Chase, Woodmere, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Mar. 12, 1973, Ser. No. 339,983
Int. Cl. A47b *85/00*
U.S. Cl. 108—26 **3 Claims**



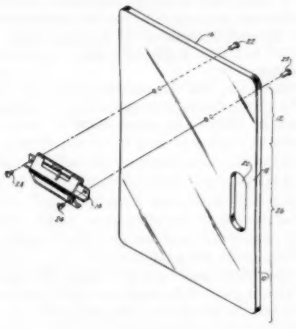
1. An assembly adaptable for mounting to the under-surface of a folding leg table, the assembly comprising a removable drawer, said assembly comprising an attachment bracket which is fastened to the undersurface of a table, and a drawer which is slidably mounted to the attachment bracket by means of an attached guide strip which fits into a slot in the attachment bracket, said guide strip fastened to, and extending from the back of the drawer through a slot in an angle at the rear end of the attachment bracket, so that the front of the drawer may be lowered below the level of the border edges of the table and slid from underneath the table, with the rear of the drawer being supported by the guide strip which loosely fits in the slot of the angle of the attachment bracket.

3,848,546
PALLET
James J. Lawlor, Glen Rock, N.J., assignor to P.D.Q. Plastics, Inc., Newark, N.J.
Filed Aug. 6, 1973, Ser. No. 385,855
Int. Cl. B65d *19/24, 19/38*
U.S. Cl. 108—52 **7 Claims**



1. A pallet comprising
a. a generally rectangular, integrally molded load-bearing body,
b. a top surface on the load bearing body,
c. a plurality of indentations in the top surface, spaced apart from each other,
d. a floor at the bottom of each top indentation,
e. the spaces between the top indentations defining bottom indentations,
f. side walls of the top indentations converging toward each other downwardly,
g. side walls of the bottom indentations converging toward each other upwardly,
h. adjacent top and bottom indentations having common side walls,
i. the top and bottom indentations having end walls disposed linearly in the same plane,
j. the top of each end wall of the top indentations coinciding with the plane defined by the top surface,
k. the bottom of each end wall of the bottom indentations coinciding with the plane defined by the bottoms of the floors of the top indentation,
l. a full-length, elongated, hollow, support leg at each opposite longitudinal side of the body, open at the top, and extending below the plane defined by the bottom of the top indentations,
m. each support leg provided with vertical, integral, latitudinal bridges defining a plurality of separate compartments in the legs,
n. the top of the bridges coplanar with the plane defined by the top surface,
o. horizontally opposite slots in the support legs in their longitudinal sides, positioned below the plane defined by the bottom of the floors in the top indentations,
p. the slots spaced upwardly from the bottom edge of the legs,
q. the portions of the bridges in the legs opposite to the slots, cut away to admit lifting devices into the legs through the slots.

3,848,547
BALLISTIC CLIP BOARD
Roger W. Schaefer, Arcadia, Calif., assignor to Safariland Leather Products, Monrovia, Calif.
Filed Mar. 13, 1972, Ser. No. 234,242
Int. Cl. E06b *9/00*
U.S. Cl. 109—49.5 **8 Claims**



1. A ballistic clip board which comprises:
a. a board member having a tensile yield strength of at least 9,000 psi and a tensile break strength of at least 8,000 psi;
b. clip means adapted for holding papers, said clip means positioned within the periphery of said board member and below the upper edge of said board member and to at least provide a transparent zone between said clip means and said upper edge of said board member and providing a protective area sufficient to shield the forehead of an average size man while providing a zone of observation between said clip and the upper edge of said board member, said board member having a length and width sufficient to protect the vital organs of an average

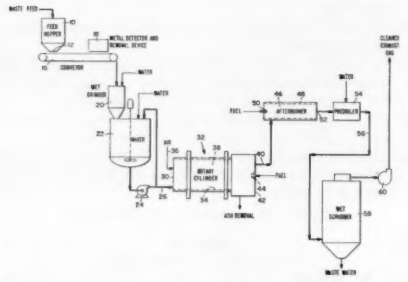
man when in a crouched position, said board member being provided with a handle formed of an aperture and contained within the periphery of said board member, adjacent to and along a length thereof, said handle positioned between said clip means and said lower edge of said board member.

3,848,548

INCINERATION PROCESS FOR DISPOSAL OF WASTE PROPELLANT AND EXPLOSIVES

James William Bolejack, Jr., Blacksburg; Truman Knox Daniel, Jr., Christianburg, and Darrell Edward Rolison, Blacksburg, all of Va., assignors to Hercules Incorporated, Wilmington, Del.

Filed Nov. 27, 1973, Ser. No. 419,299
Int. Cl. F23g *7/00*
U.S. Cl. 110—7 R **9 Claims**



1. A process for incineration of waste liquid and solid propellants and explosives comprising:

a. forming an aqueous suspension of propellant or explosive waste in water having a dispersed phase comprising solid propellant or explosive waste in particulate form, in which the solid particles have an average maximum length of less than **0.25** inch, and a continuous phase comprising water;

b. introducing air, and the suspension of step (a) into one end of a rotary incinerator operating at a temperature of from about **1200°F.** to about **2200°F.**, said suspension being fed at a rate sufficient to initially form a thin aqueous layer of said suspension on the walls of said incinerator and continuously contacting said layer of suspension with dry surface of said incinerator wall whereby the aqueous content of the continuous phase of the suspension is evaporated and the propellant particles are sequentially dried and ignited within;

c. drawing exhaust gases from the rotary kiln and contacting said exhaust gases with water to remove particulate matter and noxious gases from said gas, and

d. exhausting the resulting gases from step (c) to the atmosphere.

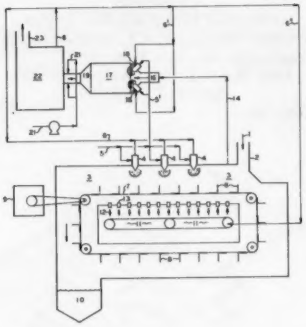
3,848,549

TWO-STAGE SMOKELESS INCINERATOR WITH FLUIDIZED BED FIRST STAGE

Robert C. Pryor, and Howard M. Katz, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 11, 1973, Ser. No. 359,444
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 A **20 Claims**

1. A substantially smokeless two-stage contiguous incinerator for incineration of waste products comprising a first stage, contiguous second stage, connecting means between said first and second stage, exiting gas means from said second stage, quench zone at the outlet of said second stage, and wherein said first stage includes fluidizing means positioned generally below said waste products to conduct fluidizing gases upwardly through said waste products thereby maintaining said waste products in at least a partially fluidized state in said first stage, and conducting means for conducting gases from said quench zone to said fluidizing gas means.

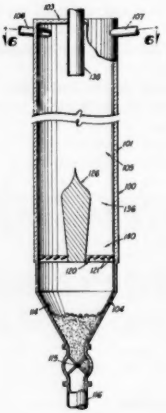


3,848,550

DEVICE FOR SEPARATING SOLID OR LIQUID PARTICLES FROM A GASEOUS MEDIUM

Mack D. Bowen, Smyrna, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.

Division of Ser. No. 136,099, April 21, 1971, Pat. No. 3,802,164. This application Feb. 1, 1974, Ser. No. 438,721
Int. Cl. F23g *5/12*
U.S. Cl. 110—18 R **14 Claims**



1. A device for decomposing particulate agricultural waste products such as peanut hulls, which comprises:

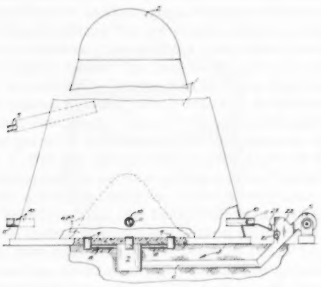
a. an elongate cylinder having first end wall means at one end thereof and second end wall means at the opposite end thereof whereby to define a chamber;
b. inlet means for forcibly introducing the particulate waste product and combustion supporting gas tangentially into said chamber adjacent said first end wall means and axially toward said second end wall means, whereby to form an outer helical flow layer adjacent the inner surface of said cylinder which reacts with said second end wall means to reverse axial direction and form a second helical flow layer within the confines of said outer layer;
c. exhaust conduit means extending through said first end wall means and presenting a discharge mouth disposed concentrically within said chamber and positioned beyond said inlet means toward said second end wall means;
d. means for heating said chamber sufficiently to at least partially decompose the waste products; and
e. flow control means disposed adjacent said second wall of said chamber to trap partially decomposed waste products adjacent said second end while constraining the gas to reverse its flow and form a compressible vortex from said flow control means to said discharge mouth of the exhaust conduit.

3,848,551

NEGATIVE PRESSURE UNDERFIRE CONTROL SYSTEM

William H. Cramer, 1510 College St. Apt. D-4, Lacey, Wash. 98503

Filed Feb. 7, 1974, Ser. No. 440,398
Int. Cl. F23g *7/00*
U.S. Cl. 110—18 R **7 Claims**



1. An underfire air control system preventing adverse temperatures within the metal shell of a burner structure, said burner structure including an underfire system for delivery of combustion supporting air from a pressure source to the base of piled waste material, said control system comprising,

draft sensing means disposed within a draft opening in the burner structure in communication with the atmosphere and the burner interior, said draft sensing means positionable in response to a draft within said opening,

regulating means associated with the underfire system and regulating the volume of air delivered from the pressure source to the burner interior, and

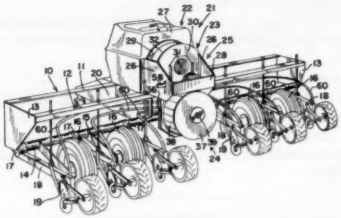
translating means interposed between said draft sensing means and said regulating means for translating movement of said draft sensing means into controlled movement of said regulating means whereby upon a predetermined draft occurring in the burner opening said regulating means will diminish the supply of underfire air to the burner interior with a consequent reduction in internal burner temperatures.

3,848,552

SEED DISPENSER FOR PLANTERS

Jack L. Bauman, 210 Robin Hill, and Vedrick A. Erickson, 865 S. Wright St., both of Naperville, Ill. 60540

Division of Ser. No. 162,091, July 13, 1971, Pat. No. 3,762,603. This application Apr. 27, 1973, Ser. No. 354,968
Int. Cl. A01c *23/02*
U.S. Cl. 111—77 **8 Claims**



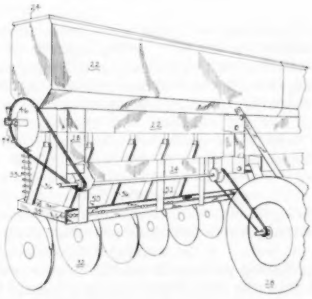
1. In a planter, a transversely elongated traveling frame having spaced furrow openers thereon, a seed dispenser assembly comprising a seed hopper centrally mounted on the frame having a seed discharge outlet in its bottom, an air blower mounted on the frame adjacent the hopper, a supporting member carried by said frame and extending below said blower, said supporting member having a first and a second surface, a drive shaft rotatably mounted in said supporting member vertically spaced from the blower, and a seed selector drum mounted on said drive shaft adjacent said first surface of said supporting member, said supporting member having openings therein communicating through a chute and a tube protruding from said second surface with said discharge outlet and said blower respectively to direct seed and air under pressure respectively to the interior of the drum.

3,848,553

AGRICULTURAL DRILL

John M. Tye, P.O. Box 218, Lockney, Tex. 79241

Filed Apr. 24, 1972, Ser. No. 247,120
Int. Cl. A01c *5/00*
U.S. Cl. 111—87 **7 Claims**

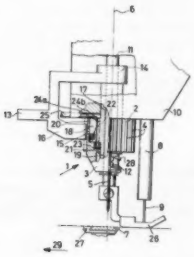


1. In an agricultural planter having

a. an elongated frame,
b. said frame including elongated, horizontal beams extending substantially the entire length of the frame,
c. means attached to the frame for attaching said frame to a draft vehicle,
d. an elongated seed box mounted on said frame,
e. said elongated seed box extending along said frame,

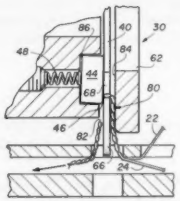
g. a plurality of seeders attached to the bottom of said seed box,
h. chutes extending from said seeders to a plurality of planting discs,
j. The improvement comprising in combination with the above:
k. a bar extending substantially the full length of said frame,
m. said bar horizontal and attached to said frame below the forward position thereof,
n. brackets attached to said bar,
o. said bar including structural means for clamping said brackets to said bar for longitudinal adjustment therealong,
p. arms pivoted to said brackets, and
q. said planter discs attached to the rear end of said arms,
r. said seed box having an elongated slot therein,
s. said seeders clamped to said box along said slot, and
t. spacers within the elongated slot between said seeders in said box.

3,848,554
CUTTING DEVICE FOR SEWING MACHINES
Manfred Kropf, Heubach-Lautern, Germany, assignor to Triumph International Aktiengesellschaft, Munchen, Germany
Filed Aug. 8, 1973, Ser. No. 386,546
Claims priority, application Germany, Aug. 9, 1972, 2239148
Int. Cl. D05b *37/08*
U.S. Cl. 112—124 **7 Claims**



1. A cutting device for cutting sewn tapes, laces, and the like and adapted for use on a sewing machine of the type having a presser foot and a stationary anvil, comprising a knife means arranged behind said presser foot with respect to the direction of feed of the material being sewn, said knife means cooperating with said stationary anvil and being operable to provide a striking and cutting motion of said knife means substantially perpendicular to the surface of the material being sewn, drive means for actuating said knife means to effectuate said striking and cutting motion of said knife means, bearing means about which said knife means is rotatable, said bearing means having an axis substantially perpendicular to the surface of the material being sewn, adjustable means for adjusting the angular position of said knife means about said axis, said presser foot having a support bar, said axis of said bearing means being disposed parallel to said support bar, said axis of said bearing means and support bar being generally aligned in the direction of feed of said sewn material, said knife means including a knife carrier having an upper portion arranged as a cylinder, said adjustable means including external gear means on said cylinder providing for rotation of said cylinder, said cylinder being formed with a hollow portion and having means defining an internal wall, a stationary carrier sleeve disposed in said hollow portion of said cylinder, said cylinder being slidable relative to said stationary carrier sleeve, said cylinder and stationary carrier sleeve defining a pneumatically operable power means for effecting said striking and cutting motion of said knife means, and biasing means providing a biasing force in a direction opposite to the direction in which said knife means is moved during said cutting and striking operation, said stationary carrier sleeve being disposed with its longitudinal axis arranged generally coaxial with said presser foot support bar.

3,848,555
SEWING MACHINE CUTTING DEVICE
Ronald J. Boser, 19 Branwood Dr., Dix Hills, N.Y. 11746
Filed Dec. 10, 1973, Ser. No. 423,509
Int. Cl. D05b *65/00*
U.S. Cl. 112—252 **7 Claims**

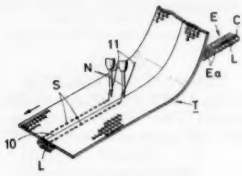


1. A cutting device for a sewing machine, said sewing machine including a vertically reciprocating sewing needle operative to produce stitched engagement of a needle thread in a work piece, a supply source for said needle thread, means to advance said work piece beneath and rearwardly of said sewing needle so as to draw taut said needle thread extending from said work piece to said supply source thereof, said taut length portion of said thread establishing a cutting zone, and said cutting device operable in said cutting zone comprising a vertically oriented wall, a block member in facing relation to said wall having a bottom cutting edge thereon, a vertically reciprocating thread-engaging member in interposed relation between said wall and block member operatively arranged to lift a loop of said needle thread into cutting relation with said cutting edge while positioning a length portion thereof between said thread-engaging member and said wall, and spring means biasing said thread-engaging member against said wall and into holding contact with said severed loop length therebetween, whereby following said severing of said thread inadvertent unthreading of said sewing machine needle is obviated.

3,848,556
METHOD FOR PRODUCING A SLIDING CLASP FASTENER
Fumio Terada; Yoshio Matsuda, and Yoshiharu Yamaguchi, all of Uozu, Japan, assignors to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 26, 1971, Ser. No. 202,083
Claims priority, application Japan, Dec. 4, 1970, 45-108006; Dec. 4, 1970, 45-108007
Int. Cl. A44b *19/40;* **D05b** *3/12*
U.S. Cl. 112—265 **2 Claims**

1. A method for producing sliding clasp fasteners comprising: providing a warp-knitted fabric section composed of a plurality of individual carrier tapes arranged in side-by-side relationship with alternate pairs of carrier tapes being connected together by a low-temperature soluble connecting thread and the remaining alternate pairs of carrier tapes being connected together by a high-temperature soluble connecting thread; separating said fabric section into pairs of carrier tapes

by dissolving said low-temperature soluble connecting thread; then sewing two rows of interengaged fastener elements to each pair of carrier tapes along opposed edges thereof; and



then dissolving said hith-temperature soluble connecting thread from the pairs of carrier tapes to separate each pair into similar halves of a sliding clasp fastener.

3,848,557

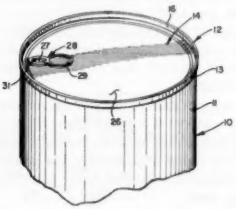
METHOD FOR FORMING PROTECTIVE EDGE ON EASY OPENING CONTAINER

Albert J. Holk, Jr., Frankfort, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 82,260, Oct. 20, 1970, Pat. No. 3,696,961, which is a continuation-in-part of Ser. No. 815,043, April 10, 1969, abandoned. This application May 1, 1972, Ser. No. 249,326

Int. Cl. B21d *51/26*

U.S. Cl. 113—121 C **7 Claims**



1. A method of forming an easy opening end closure comprising forming a shell having an upstanding chuck wall about a panel, drawing a major portion of said panel into a substantially hat shaped section having a transverse wall and a side wall, partially folding said side wall, scoring said panel to form a weakening line at least after said partially folding of said side wall has been initiated, and thereafter completely folding said side wall to form a double thickness annular folded band about said transverse wall.

3,848,558

SUBMERSIBLE AIRCRAFT CARRIER

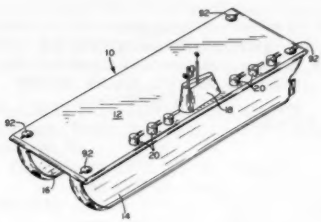
Richard D. Henry, Hookstown Grade Rd. R. D. 1, Clinton, Pa. 15026

Filed Apr. 10, 1972, Ser. No. 242,352

Int. Cl. B63b *3/13*

U.S. Cl. 114—16 R **6 Claims**

1. A submersible aircraft carrier comprising a hull having a storage for aircraft, a water-tight compartment including an openable and closeable door providing access for aircraft to be moved out of storage into said compartment, an aircraft launching deck of said carrier, elevator means for bringing the aircraft from hold level within said compartment to deck level, and a raisable and lowerable hatch disposed at deck level whereby the aircraft can be brought to deck level while maintaining the said compartment at a water-tight condition and isolated from the remainder of the hold of the aircraft carrier,



a launching deck for said aircraft including a landing surface with a plurality of apertures opening at the landing surface for providing drainage of surface water from the deck, and means for heating the deck surface to preclude the formation of ice thereon.

3,848,559

CENTRALIZED CARGO HANDLING SYSTEM FOR CRYOGENIC VESSELS

Frank J. Tarossi, Middletown, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 323,406, Jan. 15, 1973, which is a continuation of Ser. No. 118,445, Feb. 24, 1970, abandoned. This application Dec. 12, 1973, Ser. No. 424,053

Int. Cl. B63b *25/08*

U.S. Cl. 114—74 A **9 Claims**

1. A tanker for the transportation of liquid cargo at atmospheric pressure and cryogenic temperatures comprising, in combination:

a. a deck;

b. a hull having forward, after and intermediate cargo-carrying portions, said cargo-carrying portion having a transverse bulkhead located at each end thereof and being constructed and arranged into a plurality of cargo-carrying holds between said ends;

c. cofferdam means located aft of said cargo-carrying portion to provide a pump room for housing electrical and mechanical equipment necessary for the loading and discharge of the liquid cargo,

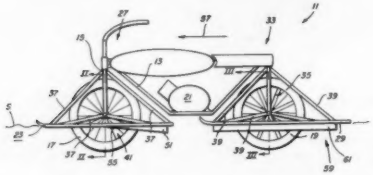
aa. said pump room including manifold means for loading and discharging said liquid cargo and pump means operably associated therewith;

d. a first piping system including a first plurality of separate and independent main cargo pipes extending longitudinally along the bottom of said hull within said cargo-carrying portion, each one of said separate and independent pipes being connected at one end to said pump means and terminating in a different corresponding one of said cargo-carrying holds, whereby said liquid cargo can be selectively distributed throughout the tanker; and

e. a second piping system including a second plurality of separate and independent cooldown and recirculation pipes extending longitudinally at the top of said hull

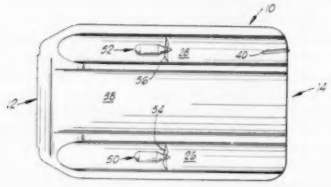
adjacent and below said deck, each one of said separate and independent cooldown and recirculation pipes being connected at one end to said pump means and selected ones of said pipes operably extending to and terminating at different corresponding ones of said cargo-carrying holds.

3,848,560
AMPHIBIOUS MOTORCYCLE
Samuel R. Du Bose, P.O. Box 1134, Clarksdale, Miss. 38614
Filed Aug. 20, 1973, Ser. No. 390,058
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 R **8 Claims**



1. The combination with a motorized non-buoyant vehicle having a frame, a guidable fork pivotally attached to said frame for pivotal movement about a substantially vertical axis, a forward wheel rotatably attached to said fork, a rearward wheel journaled to said frame, and drive means attached to said frame for rotatably driving at least one of said forward and rearward wheels; forward strip-like ski means attached to said fork for supporting the forward portion of the vehicle upon the surface of a body of water as the vehicle is propelled, rearward strip-like ski means attached to said frame adjacent said rearward wheel for supporting the rearward portion of the vehicle upon the surface of the water as the vehicle is propelled, and propelling means coupled to said drive means for propelling the vehicle over the surface of the water, said forward and rearward ski means constituting the sole supporting means for said vehicle only while under power in water.

3,848,561
BOAT
Walter V. Price, 321 N. Jefferson, P. O. Box 195, Arnett, Okla. 73832
Filed Jan. 15, 1973, Ser. No. 323,997
Int. Cl. B63h *5/08*
U.S. Cl. 115—39 **12 Claims**



1. A boat comprising:
a hull having a pair of spaced water flow channels disposed on opposite sides of the bottom thereof and extending aft from the bow to the stern of the boat, said flow channels opening downwardly in the water over their entire length, having a concave upper side of semi-circular configuration, and being of substantially the same depth from the bow to the stern of the boat;
a propeller assembly disposed in each of said water flow channels, each of said assemblies including a propeller; and
means for individually and independently controlling the speed and direction of rotation of each of said propellers.

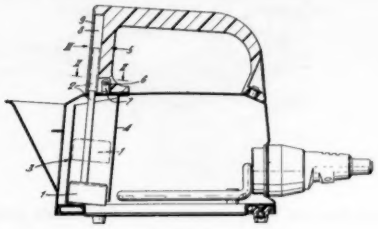
3,848,562
TRAFFIC CONTROL SIGN
Donald M. Downing, 4408 S. 41st W. Ave., Tulsa, Okla. 74107
Continuation-in-part of Ser. No. 277,668, Aug. 3, 1972, Pat. No. 3,741,147. This application May 23, 1973, Ser. No. 362,894
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 R **12 Claims**

1. In a traffic control sign including:
a first rectangular planar panel and means to support said first panel in a vertical position;
at least a second rectangular vertical planar panel, means to rotatably support said second panel at a vertical edge thereof to a vertical edge of said first panel, said second panel rotatable;
means to support electric motor means on said first panel; means to support a support plate on said first panel and means to journal wing shaft means in said support plate, said second panel attached to said wing shaft means;
means to rotatably mounted wing shaft drive means about said wing shaft;
drive means operatively connected between said motor and said wing shaft drive means;
means for controllably starting and stopping said motor, wherein upon energization of said motor in one instance said wing shaft and said rotatable panel are rotated in one direction, and upon subsequent energization of said motor in a seocnd instance they are rotated in the opposite direction;
the improvement comprising:
spring drive means operatively connected between said wing shaft drive means and said wing shaft means comprising:
a. a first radial arm attached to said wing shaft drive means, said wing shaft drive means rotating freely coaxial with said wing shaft;
b. a second radial arm, spaced along said wing shaft from said first arm, attached to said wing shaft;
c. helical spring means surrounding said wing shaft in the space between said radial arms, first and second ends of said spring means operatively connected to said first and second arms;
whereby when said wing shaft drive means is actuated, said first arm will rotate, causing one end of said spring to be rotated, causing said second end of said spring to be rotated in the same direction, and causing said second arm to be rotated, causing said wing shaft and said rotatable panel to be rotated.

3,848,563
KETTLES

John Robert Brown, London, England, assignor to Sunbeam Electric Limited, Glasgow, Scotland

Filed June 11, 1973, Ser. No. 368,674
Claims priority, application Great Britain, June 15, 1972, 2815/72
Int. Cl. G01f *23/00*
U.S. Cl. 116—118 R **6 Claims**

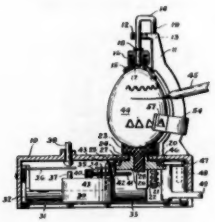


1. A kettle with a liquid level indicator comprising a hollow kettle body for containing a liquid, a handle secured to said kettle body, a substantially vertically extending hollow guide housing secured within said kettle body having the interior of said housing in fluid communication with the liquid in said kettle body, float means having an indicating portion, means constraining said float means to vertical movement within said guide housing, to be positioned vertically in accordance with the level of liquid contained within said kettle body, said handle having a substantially vertical upright portion, said upright portion being positioned above said guide housing, a substantially vertically extending passage in said upright portion, an aperture in said kettle body permitting movement of said indicating portion into said passage, said indicating portion being visible in said passage for indicating the level of liquid in said kettle body.

3,848,564
ROTATING EGG COLORING DEVICE

Leo Kull, 58 Westover Ave., West Caldwell, N.J. 07006

Filed July 18, 1973, Ser. No. 380,513
Int. Cl. B05c *11/12*
U.S. Cl. 118—13 **4 Claims**

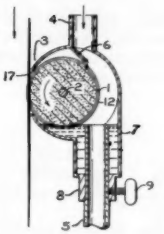


1. An egg coloring device having a base, a holding means and a rotating means to hold and rotate an egg, said base supporting rotatably said holding and said rotating means, said holding means being spring loaded toward said rotating means with a stop position keeping them apart a distance slightly less than the length of a small egg, said holding and rotating means rotating on a common axis, said rotating means being rotatable by a power source, said rotating and said holding means providing a frictional hold for an egg when said egg is placed between them with the long axis of said egg lined up with said common axis, said power source being capable of rotating said rotating means together with said egg, said base including a post next to said egg with an equal clearance between said egg and said post, said post having means for attaching templates with various template holes next to said egg, said templates being slidable on and frictionally retained on said post, whereby said templates may be adjusted relative to said egg with said template holes serving as guiding means for drawing various shapes and lines to the shell of said egg.

3,848,565
BLANKET FEED BINDER APPLICATOR

John V. Schweppe, Shelby, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 29, 1972, Ser. No. 319,423
Int. Cl. B05c *1/08*
U.S. Cl. 118—234 **4 Claims**



1. A roller applicator for applying solution to fibers drawn across the surface thereof comprising a housing, a freely rotatable cylindrical applicator contained in said housing, said housing being provided with a port through which the roller is exposed to the atmosphere and out of which a portion of the surface of the applicator protrudes; means to feed the solution across the surface of the roller inside of said housing; means to remove excess solution from the housing continuously; means associated with the applicator surface to direct flow of solution on the surface of said roller towards the center thereof and away from the ends thereof, said means including a concave applicator surface and collar means on each end of said applicator, said collars having diameters greater than the diameter of any portion of the applicator located therebetween, to thereby direct fluid from said collar towards the center of said applicator along said concave surface.

3,848,566
DONOR APPARATUS

Klaus K. Stange, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 864,265, Sept. 24, 1969, Pat. No. 3,687,106, Continuation-in-part of Ser. No. 840,967, July 11, 1969, abandoned. This application May 10, 1972, Ser. No. 251,954
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **5 Claims**

1. A developing system for latent patterns employing electroscopic marking particles comprising:

a cylindrically shaped applicator adapted to be rotated about an axis and capable of holding electroscopic marking particles;

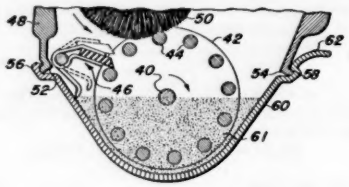
a plurality of elongated donor members each having a surface portion capable of attracting electroscopic marking particles;

support means for supporting each of said donor members substantially in spaced parallel relation with each other;

means coupled to said support means for moving said

donor members through a closed path, a portion of which brings said donor members successively into contact with said applicator;

a shroud partially enclosing said applicator at least along its axial dimensions and having engageable areas thereon; and



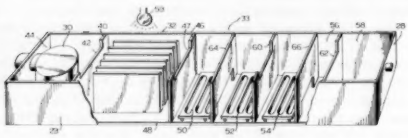
a housing resiliently engaged with said areas on said shroud and adapted to support a quantity of electroscopic marking particles adjacent said closed path, said housing being detachable from said shroud by moving said housing from said areas.

3,848,567

AQUARIUM

John W. Garber, Jr., 1815 Regents Park Rd., Crofton, Md. 21113

Filed Apr. 26, 1974, Ser. No. 464,681
Int. Cl. A01k *63/00*
U.S. Cl. 119—5 **7 Claims**



1. An improved salt water aquarium, comprising:

a transparent tank member having a base, salt water fish being advantageously displayed therein;

a base member positioned below and supporting the base of said transparent tank member;

a combination air-water filter head disposed on the base of said transparent tank member and communicating with said base member, said filter head having a water inlet means, a water outlet means and an air inlet means;

an isolation valve positioned within said base member and coupled to the water outlet means;

a filter unit positioned within said base member and having an inlet and outlet, said isolation valve operatively coupled to said inlet, said filter unit being substantially as large as said base member and thereby having a relatively large surface area, water being circulated through said filter from said tank member for filtration thereof, a valve responsive to the liquid level in the filter positioned at the inlet for maintaining the water level within said filter unit at a predetermined desired level, said filter unit being uncovered and thereby exposed to the air within said base;

a pump member positioned within said base and coupled to the outlet of said filter unit; and

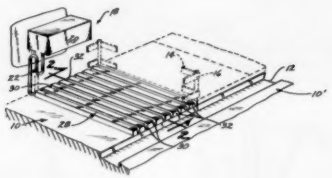
a check valve coupled between said pump member and said water inlet means for preventing backflow of water if said pump is inoperative.

3,848,568

RIBBED FLOOR AND METHOD OF WASTE REMOVAL

Thamon E. Hazen, Ames, Iowa, and John R. Miner, Corvallis, Oreg., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Dec. 29, 1972, Ser. No. 319,212
Int. Cl. A01k *01/00*
U.S. Cl. 119—28 **4 Claims**



1. A floor and waste disposal system for animals, comprising,

a floor section sloping approximately one degree downwardly from an upper end portion to a lower end portion, said floor section having in at least a substantial center portion a plurality of elongated spaced apart narrow channels extending longitudinally from said upper end portion towards said lower end portion, each of said channels having a top width, a bottom width and a depth, said top width being less than said bottom width and being within the range of from about 1¼ to about 1⅜,

said depth being at least equal to the maximum width of said channel,

a liquid distribution compartment extending substantially across the upper end portion of said floor section, said compartment having liquid communication openings in operative liquid communication with the upper ends of said channels,

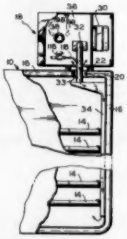
and means for intermittently rapidly introducing a flushing liquid into said liquid distribution compartment.

3,848,569

METHOD AND APPARATUS FOR CONTROLLING GASEOUS ENVIRONMENT

Max H. Folsom, Portland, Oreg., assignor to National Appliance Company, Portland, Oreg.

Continuation-in-part of Ser. No. 293,014, Sept. 28, 1972, abandoned. This application May 29, 1973, Ser. No. 364,720
Int. Cl. A01k *41/04*
U.S. Cl. 119—37 **31 Claims**



1. A method of controlling the environment of an incubator by controlling the concentration of carbon dioxide therein, said method comprising:

detecting the proportion of carbon dioxide in said incubator by electrically detecting a parameter which changes in accordance with the concentration of carbon dioxide,

selecting the desired concentration of carbon dioxide and continuously comparing said parameter with a function of said desired concentration,

and automatically adding carbon dioxide to the environment of said incubator whenever the concentration falls below the desired value.

3,848,570

RECEPTACLE-BIRD FEEDER

Robert E. Scigliano, 176 Vinal St., Revere, Mass. 02151

Filed Apr. 10, 1973, Ser. No. 349,797

Int. Cl. A01k *5/00*

U.S. Cl. 119—51 R **5 Claims**

1. A throw-away type receptacle for receiving waste cooking grease or suet comprising, a container having slot means formed in the side wall thereof, a discardable sleeve mounted on the container providing a leak-proof cover for said slot means during the filling of said container, and bird perch means connected to said container, whereby after the container has become filled with solidified grease or suet, the discardable sleeve is removed therefrom to expose the contents of the can to the atmosphere through the slot means, to thereby provide a bird feeder.

3,848,571

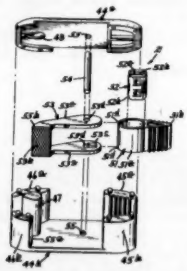
HOPPLE

Monty L. Pearson, Muncie, and Lee C. Walls, Valparaiso, both of Ind., assignors to Raceway Products Corporation, Muncie, Ind.

Filed Mar. 27, 1973, Ser. No. 345,439

Int. Cl. F16g *11/04;* **A44b** *11/10*

U.S. Cl. 119—126 **17 Claims**



1. A buckle for releasably and adjustably receiving and retaining a strap, comprising:

a. a housing having an open end to receive the strap, and converging, opposed side walls proximate said open end;

b. handle means carried by the housing for rotation about a fixed axis and having a handle portion manually accessible external of the housing for movement between clamping and non-clamping positions;

c. a clamping member having converging outer surfaces cooperable with the converging side walls of the housing in clamping relation therewith and adapted to have the strap threaded therearound, the clamping member defining an enclosed portion loosely retained about the rotational axis of the handle means to permit movement of the clamping member between clamping and non-clamping positions;

d. and an actuating member disposed within the enclosed portion of the clamping member, the actuating member being rotatable with said handle means and engageable with said clamping member in camming fashion to effect movement thereof into said clamping position.

3,848,572

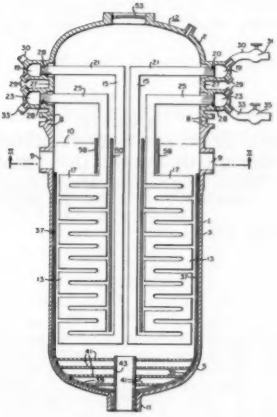
STEAM GENERATOR

Angelo R. Giardina, Broomall, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 9, 1971, Ser. No. 169,978

Int. Cl. F22b *1/02*

U.S. Cl. 122—32 **6 Claims**



1. A vapor generator for transferring heat from a primary fluid to a secondary fluid to vaporize said secondary fluid, said vapor generator comprising in combination:

a vertical cylindrical shell portion,

a lower head portion,

an upper removable head portion,

a level to which said primary fluid fills said shell, when said vapor generator is operating,

means for supplying inert gas to said upper head to maintain said level,

means for introducing primary fluid to the upper portion of said shell below said level,

means for removing primary fluid from the lower portion of said shell,

a plurality of modular tube bundles,

each tube bundle comprising a generally vertical downcomer portion and a serpentine riser portion, the latter portion being disposed below said level,

said upper removable head portion having a cylindrical wall portion,

said cylindrical wall portion having at least one head portion for each modular tube bundle extending outwardly therefrom,

said tube bundles and their associated heads being so dis-

posed so that the inlet and outlet end portions of said tube bundles extend generally horizontally prior to terminating in the associated heads providing an arrangement wherein each tube bundle is essentially the same configuration, and the tube bundles are removable from the shell with the upper head portion,

a cylindrical sleeve member disposed adjacent said shell to provide an annular quiescent zone between said shell and said sleeve member,

a plurality of baffles disposed between adjacent tube bundles and cooperating with the sleeve member to generally wall off each serpentine portion of each tube bundle in a compartment and provide a riser compartment free of tubes adjacent each compartment having the serpentine tubes disposed therein,

said baffles having heavy walls capable of withstanding high pressure differentials, and

a plurality of pressure relief means disposed within said walls,

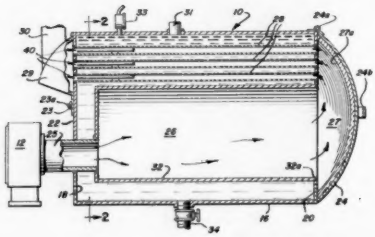
said pressure relief means being adapted to relieve pressure build-up in the compartments having the serpentine tubes disposed therein.

3,848,573

BAFFLE MEANS FOR HEAT EXCHANGER, AND METHOD OF FABRICATION THEREOF

James L. Phillips, 2635 S. Avers Ave., Chicago, Ill. 60623

Filed Nov. 3, 1972, Ser. No. 303,321
Int. Cl. F22b *7/12*
U.S. Cl. 122—149 **11 Claims**



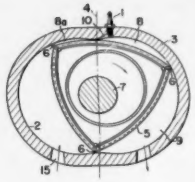
1. In combination, a fire tube boiler having a plurality of generally horizontal heat tubes mounted within a boiler shell and a combustion chamber in communication with the heat tubes for supplying heated gases thereto to heat water about the heat tubes by heat transfer, and baffle means in at least some of said heat tubes spanning a part of the cross-sectional area thereof in the portion to which the heating medium normally gravitates to encourage deflection of the heating medium to that portion of the tubes to which it does not normally gravitate, the baffle means each being comprised of a one-piece member having a body portion extending longitudinally of a heat tube, a baffle portion extending upwardly from one end of said body portion transversely of said heat tube spanning the top portions of the heat tube, and feet means extending downwardly from said body portion for engaging the lower portions of the heat tube affording the sole support of the baffle member in said heat tube.

3,848,574

COMBUSTION PROMOTING IMPROVEMENT IN ROTARY ENGINE

Tetsuzo Fujikawa; Masahisa Kawano, and Masaru Yamamoto, all of Akashi, Japan, assignors to Kawasaki Jyukogyo Kabushiki Kaisha, Hyogo-ken, Japan

Filed May 31, 1973, Ser. No. 365,739
Claims priority, application Japan, June 3, 1972, 47-65655
Int. Cl. F02b *53/12*
U.S. Cl. 123—8.09 **2 Claims**



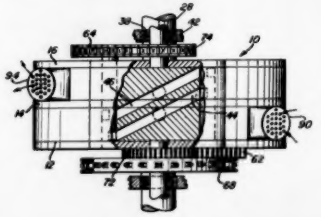
1. An arrangement in a rotary engine comprising a housing having a trochoidal inner surface with a minor axis; a rotor of multi-lobed shape undergoing planetary rotational movement within the casing for executing intake of a working fluid, compression, explosion, and exhaust; means forming a recess in the inner surface of said housing; a spark plug disposed in said recess, said spark plug being disposed at a position downstream, with respect to the rotational direction of the rotor, from said minor axis, said recess being elongated in the rotational direction and being defined by a downstream wall surface continuously and semi-cylindrically surrounding the downstream side of said spark plug; a pair of opposing side wall surfaces contiguously adjoining the downstream wall surface on respective opposite sides thereof and extending upstream in mutually converging directions; and a bottom surface contiguously adjoining said wall and downstream wall surfaces and extending smoothly upstream with such an inclination that the depth of said recess decreases progressively in the upstream direction to zero, whereby the recess directs a combustion flame generated at the spark plug in a converging manner toward the upstream side of the spark plug, said downstream wall surface acting as a reflector for the flame.

3,848,575

SLIDING VANE ROTARY COMBUSTION ENGINE

Raymond E. Williams, 15126 Pioneer Blvd., Norwalk, Calif. 90650

Filed Jan. 26, 1973, Ser. No. 326,668
Int. Cl. F02b *53/06, 53/08*
U.S. Cl. 123—8.11 **7 Claims**



1. A rotary engine comprising casing means defining a pair of generally cylindrical chambers, a pair of generally cylindrical rotors journalled from said casing means in said chambers, said rotors being smaller in diameter than said chambers and

eccentrically disposed therein with the peripheries of said rotors disposed in closely spaced relation with predetermined peripheral areas of said chambers so as to define a single crescent shaped working zone in each chamber, means coupling said rotors for rotation together, each of said rotors being equipped with a single generally radially slidable vane for sweeping the working zone of the corresponding chamber, said casing means including intake means opening into the working zone of one chamber on the departure side of the corresponding peripheral area and outlet means opening into the working zone of the other chamber on the approach side of the corresponding peripheral area, said engine including a pair of transfer passages including inlet ends opening into the working zone of said one chamber on the approach side of the corresponding peripheral area and outlet ends opening into the working zone of the other chamber on the departure side of the corresponding peripheral area, the vane of the rotor disposed in said other chamber being advanced relative to the vane of the rotor disposed in said one chamber, in its approach toward the corresponding peripheral area, and a pair of rotary valve structures driven at one half rotor speed operatively associated with the inlet and outlet ends of said transfer passages operative to alternately open and close the inlet and outlet ends of said passages, one of said valve structures being operative to generally inversely open and close the intake ends of said passages and the other of said rotary valve structures being operative to generally inversely open and close the outlet ends of said passages each revolution of said rotors, and rotor driven liquid fuel injection means operative to alternately inject liquid fuel into said transfer passages.

3,848,576

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

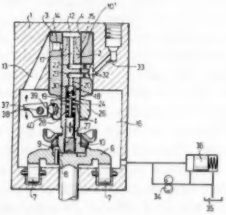
Gerald Hofer, Flacht, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 1, 1973, Ser. No. 411,824

Claims priority, application Germany, Nov. 29, 1972, 2258309

Int. Cl. F02m *41/08*

U.S. Cl. 123—139 BD **6 Claims**



1. In a fuel injection pump for internal combustion engines, including: (a) a housing; (b) a cylinder mounted within said housing and having a central bore and a plurality of fuel supplying bores formed about the circumference of said cylinder and extending substantially radially from said central bore; (c) a plurality of channel means within said housing, each extending between a fuel injection nozzle and a fuel supplying bore, said channel means and their operatively associated fuel supplying bores forming a plurality of fuel paths, one for each of the fuel injection nozzles, said plurality of fuel paths being equal in number to the number of engine cylinders supplied by said pump; (d) a piston, said cylinder and said piston defining a work chamber; (e) cam means for rotating and reciprocating said piston within said central bore; said piston serving, as a result of its motion within said central bore, to distribute fuel through respective ones of said plurality of fuel paths; (f) relief channel means defining a first control point; (g) relief valve means operatively associated with said relief channel means, said relief valve means being adapted to open during the fuel supply stroke of said piston, as a function of engine rpm and after the fuel supply to said fuel paths has been interrupted to thereby control the fuel pressure of the fuel quantity within said fuel paths, the improvement wherein:

A. said relief channel means comprises two coaxially disposed blind bores within said piston and two radial bores one for each of said coaxially disposed blind bores, each said radial bore extending radially from the blind end of its respective blind bore;

B. two fuel supplying bores are provided for each associated channel means with each of said radial bores being operatively associated with a respective one of each of said two fuel supplying bores, and with one of said radial bores and its operatively associated fuel supplying bores defining a second control point and the other of said radial bores and its operatively associated fuel supplying bores defining a third control point;

C. said coaxially disposed blind bore closest to said work chamber and said third control point serving as a passage for supplying fuel to be distributed and as a passage through which fuel is distributed; and

D. said coaxially disposed blind bore farthest from said work chamber and which extends between said first control point and said second control point including a spring-loaded valve which opens in the pressure relief direction.

3,848,577

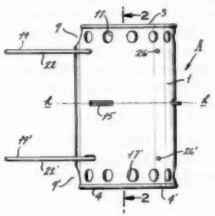
CHARCOAL FIRE STARTER AND GRILL

Duane L. Storandt, 12 Hanley Downs, Richmond Heights, Mo. 63117

Filed Mar. 12, 1973, Ser. No. 340,257

Int. Cl. A47j *37/07*; **F24b** *3/00*

U.S. Cl. 126—25 B **4 Claims**



1. A charcoal fire starter comprising:

An open-ended body;

A grate carried by said body;

Said grate separating said body into a charcoal chamber and a combustible material chamber;

Handle means detachably engaged to said body comprising a substantially U-shaped handle having a hand grip portion and a pair of legs;

Each leg having a terminal portion remote from said hand grip portion;

Each terminal portion having a bend turning away from each other in the plane containing said legs to define an outwardly projecting lug;

Each leg having a first portion located exteriorly of said body and a second portion presented interiorly of said body;

Said body having handle receiving slots for accommodating the legs of said handle;

Said body having locking apertures for receiving the lugs of said leg terminal portion;

Said handle being of rod stock having a diameter;

Each handle receiving slot having a height substantially the same as the diameter of said leg;

One of said handle receiving slots having a length slightly greater than the diameter of said leg to accommodate endwise entry of one lug and the related bend;

The other of said handle receiving slots having end portions, the distance between parallel planes containing the end portions being substantially the same as the length of the associated lug to permit lengthwise entry of same.

3,848,578

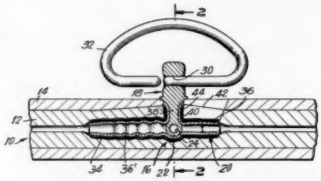
VALVE WITH MEANS FOR PROMOTING INGROWTH OF TISSUE

Louis Bucalo, Holbrook, N.Y., assignor to Investors in Ventures, Inc., new york, N.Y.

Continuation-in-part of Ser. No. 103,606, Jan. 4, 1971, Pat. No. 3,707,957. This application Oct. 5, 1972, Ser. No. 295,144

Int. Cl. A61b *19/00*

U.S. Cl. 128—1 R **5 Claims**



1. For use in the body of a living creature, valve means adapted to be inserted into an interior passage of the body for controlling the flow of fluid therethrough, and filamentary means extending around and carried by an exterior surface of said valve means for promoting ingrowth of tissue into tight engagement with said exterior surface, said exterior surface surrounding a given axis and said filamentary means being wound continuously around and engaging said exterior surface without interruption circumferentially around said axis, said living creature being a human being and said valve means being small enough to be inserted into a human vas and being made of a material compatible with the interior of the body, said valve means having outer and inner components and said filamentary means being carried by said outer component of said valve means.

3,848,579

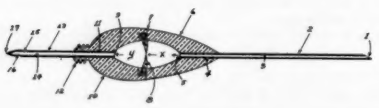
AUTOMATIC ELASTO-VALVULAR HYPODERMIC SAMPLING NEEDLE

Antony-Euclid Villa-Real, 5934 Schering Rd., Baltimore, Md. 21206

Filed Feb. 23, 1973, Ser. No. 335,419

Int. Cl. A61b *5/14*; **A61m** *5/32*

U.S. Cl. 128—2 F **31 Claims**



1. In combination, a blood specimen collection assembly comprising a hallow hub means, a resilient valve, a first hollow cannula and a second hollow cannula, both of said cannulas fixed axially in relation to each other as well as in relation to the center of the said valve by the said hub means, and wherein the first said cannula having a pointed end being for the purpose of puncturing the skin and the blood vessel wall, and wherein the said second cannula having a pointed end being for the purpose of piercing the rubber stopper of the evacuated specimen collection receptacle to establish communication between the said assembly and the vacuum of the said evacuated specimen collection receptacle, a first cavity and a second cavity, both of the said cavities located interiorly of the said hub means, said hollow first cannula communicating with the said first cavity providing a fluid inlet, and, said second cannula being also hollow and communicating with the said second cavity providing a fluid outlet, said valve situated therebetween the said first and second cavities, said valve having a cross-section that is thickest at the outward portion and thinner at the inward portion and particularly thinnest at the central part making the said valve structurally sensitive to the relevant pressure differential changes focussed at and immediately around the said central part of the said valve, said valve in cross-section describing an inclined arc-like convexity toward the first cavity at its foreface proximal to the said first cavity, and, said valve defining an inclined arc-like concavity toward said second cavity at its hind-face proximal to the said rear cavity, the combination of both the said inclined arc-like convexity and concavity being formed from the outer section of the said valve toward the said valve's central part with a taper of the said valve toward the said valve's center, said valve provided with a plurality of cuts across its central part and said cuts converging toward and intersecting the said valve' s center defining a plurality of said cross sections; said valve held in stationary position at its outer border by the inner portion of the said hub means; said valve normally in the closed position when the said assembly is not properly engaged with a potent evacuated specimen collection receptacle and not properly linked with an active vein; said valve being in a minutely semi-open position as far as air transit from the said first cavity to the said aft cavity is concerned when the said first cannula is in communication with the kinetically flowing venous blood running through the venous lumen of the properly penetrated vein thus allowing blood transport from the venous side into the said fore cavity, but, said valve, after air transit across its minutely widened cuts not permitting the viscous blood to transfer across said valve into the said second cavity and into the said evacutated receptacle until a substantially potent aspirating force triggers the said valve to the actually open position so as to allow the blood specimen collection through the said assembly into the said aspirating receptacle, said valve in the open position achieving gradual variation in aperture sizes directly proportional to the degree of pressure difference between the venous pressure and the aspirating negative pressure of the said communicated evacuated specimen collection receptacle so that in effect the said valve serves as a compensatory shock absorber automatically decreasing the undesired effects of high shear forces that predisposes the red blood cells to mechanical hemolysis using the evacuated receptacle as a means of blood specimen extraction.

3,848,580

APPARATUS FOR CONTROLLED SELECTIVE SEPARATION OF UNDESIRABLE CONSTITUENTS FROM BLOOD TO ACHIEVE A THERAPEUTIC EFFECT

Viktor Holger Hyden, Prastgardsgatan 2, and Fritz Victor Hasselblad, Box 220, both of Goteborg, Sweden

Filed Dec. 10, 1971, Ser. No. 206,812

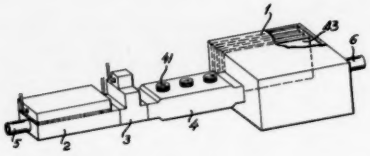
Claims priority, application Sweden, Dec. 11, 1970, 16781/70

Int. Cl. A61b *5/00*

U.S. Cl. 128—2 F **10 Claims**

1. Therapeutic apparatus for controlled selective separation of constituents of blood flowing from a donor comprising a passage adapted to have blood flow therethrough a device

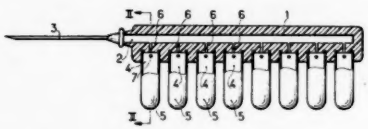
communicating with said passage including a plurality of active surface means positioned to be contacted by the said flowing blood for separating predetermined constituents of the blood, and detection means communicating with the passage and said device for measuring characteristics of the flowing blood and for emitting a signal in response to a predetermined value of each such measured characteristic whereby the occurrence of an abnormality in or completion of said selective separation can be detected.



3,848,581
APPARATUS FOR TAKING MULTIPLE SAMPLES OF BIOLOGICAL LIQUID

Paul Cinqualbre, and Louise Cinqualbre, nee Monier, 20, rue de la Ravinelle, both of Nancy, France

Filed Oct. 10, 1972, Ser. No. 296,215
Claims priority, application France, Oct. 8, 1971, 71.36314; Oct. 2, 1972, 72.35882
Int. Cl. A61b *5/14*
U.S. Cl. 128—2 F **8 Claims**

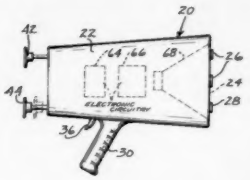


1. Apparatus for taking samples of a biological liquid and particularly human blood to obtain a plurality of separate samples for different analyses, comprising an elongated body having a longitudinally extending central passageway, a hypodermic needle connected with said central passageway at one end of said body, a plurality of test tubes, means for removably mounting said test tubes by their upper ends in depending position under said body with the upper ends of the test tubes closed by said body, said mounting means comprising means for slidably gripping the upper end of each test tube for movement between an upper position and a lower position and venting means comprising a vent passage which is closed by the test tube when in its upper position and opened when the test tube is in its lower position, and branch passageways leading from said central passagewy to said test tubes respectively, whereby the individual test tubes can be filled successively to the desired extent with samples of liquid supplied through said needle, central passageway and the respective branch passageways by selectively manually lowering individual test tubes to corresponding lower positions on said mounting means to allow displacement of air in the lowered test tubes by fluid.

3,848,582
PORTABLE ELECTROCARDIOGRAPHIC SIGNAL APPARATUS

Dean L. Milani, Highland Park, and Richard G. Kerwin, Prospect Hgts., both of Ill., assignors to Medical Research Laboratories, Inc., Des Plaines, Ill.

Filed July 10, 1972, Ser. No. 270,441
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **4 Claims**

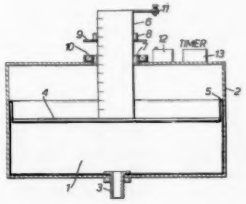


1. A portable electrocardiographic signal apparatus comprising a housing, a display screen on the front of said housing, pickup electrode means carried by said housing on the back thereof and positioned externally thereof for placement against a patient's chest, mounting means for said electrode means extending into said housing, spring means mounted internally of said housing and bearing on said mounting means resiliently to bias said electrode means outwardly of said housing, positive stop means in said housing acting on said mounting means to limit outward movement of said electrode means, means in said housing engaging and laterally stabilizing said mounting means and hence said electrode means, electronic circuitry means in said housing interconnecting said electrode means and said display screen, and pistol grip means on and extending down from the bottom of said housing substantially centrally thereof for normal gripping of said pistol grip means by one hand of an operator to support said housing in one hand with said pickup electrode means against a patient's chest and said screen disposed toward said operator in ready viewing position for said operator to display an instantaneous electrocardiographic signal.

3,848,583
SPIROMETERS

Eric W. Parr, Staines, England, assignor to Wilkinson Sword Limited, London, England

Filed Feb. 7, 1973, Ser. No. 330,190
Claims priority, application Great Britain, Feb. 19, 1972, 7803/72
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **17 Claims**



1. A self-contained hand-portable spirometer, comprising a hand-portable container having an inlet for receiving air exhaled by a patient,

an expansible chamber in the container and having an air inlet connected to the said inlet of the container for receiving the air exhaled by the patient, the expansible chamber being defined by wall means of substantially air-tight solid-phase material,

indicating means attached to the container,

control means releasably rendering the indicating means responsive to the chamber expansion for indicating the volume of the said air received,

timing means attached to the container,

means responsive to the initial receipt of the exhaled air by the chamber for initiating the timing means to produce a timing signal for indicating a measuring instant at a predetermined time after the initial receipt of the exhaled air, and

means responsive to the said timing signal for actuating the control means to render the indicating means unresponsive to the expansion of the chamber and to maintain the indication of the indicating means at the said predetermined instant.

3,848,584

INTEGRATED FLOW INDICATOR

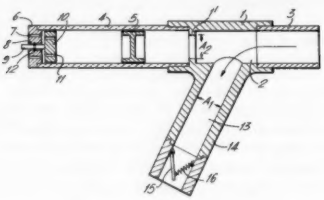
Ben Amy Otsap, Encino, Calif., assignor to Meeda Scientific Instrumentation Limited, Tel Aviv, Israel

Filed Apr. 5, 1973, Ser. No. 348,245

Claims priority, application Israel, Apr. 17, 1972, 39232

Int. Cl. A61b *5/08*

U.S. Cl. 128—2.08 **5 Claims**



1. An improved integrated flow indicator adapted for measuring the capacity of human breath comprising: a body having a cylindrical bore including a first and second ends; an entrance adapter and mouthpiece formed adjacent to the first end of the cylindrical bore and communicating therewith; a floating piston disposed in the cylindrical bore adjacent to the first end of the cylindrical bore and slidable in the cylindrical bore between a first position adjacent to the first end of the cylindrical bore and a second position adjacent to the second end of the cylindrical bore; at least one passage in the body leading off from the cylindrical bore between the first end of the cylindrical bore and the first position of the piston and having an outlet valve means disposed in the passage adjacent to the outlet of the passage; spring means biasing the valve means to a passage closed position, with the biasing force exerted by the spring means such as to assure that a linear relationship is maintained between the velocity of flow and quantity of air flowing through indicator; and means for returning the piston to its first position after usage of the indicator.

3,848,585

PEAK FLOW INDICATOR FOR FLUIDS

Ben Amy Otsap, Encino, Calif., and Eli Neuman, Kiron, Israel, assignors to Meeda Scientific Instrumentation Limited, Tel Aviv, Israel

Filed Apr. 5, 1973, Ser. No. 348,246

Claims priority, application Israel, Apr. 17, 1972, 39233

Int. Cl. A61b *5/08*

U.S. Cl. 128—2.08 **7 Claims**

1. An improved peak flow and/or velocity indicator adapted for testing the human breath in order to measure the pulmonary activity of a patient comprising:

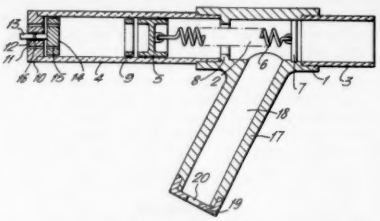
a body including a cylindrical bore having a first end and a second end;

a mouthpiece means for use by a patient formed adjacent to the first end of the cylindrical bore and communicating therewith;

a piston disposed in the cylindrical bore and slidable in the cylindrical bore between a first position adjacent to the first end of the cylindrical bore and a second position adjacent to the second end of the cylindrical bore;

a spring disposed in the cylindrical bore so as to bias the piston toward its first position;

at least one passage leading off from said cylindrical bore between the first position and the mouthpiece means and having an outlet therein;



control means for permitting a predetermined flow of air through the outlet of the passage;

indicator means disposed in the cylindrical bore between the second end of the cylindrical bore and the piston and slidable in the cylindrical bore, with the indicator means being normally positioned adjacent to and in contact with the piston and being moved by the piston as the piston moves from its first position towards its second position; and

means for returning the indicator means to its normal position after the indicator means has been moved by the piston, said return means being separate and distinct of said indicator means.

3,848,586

SIGNAL DETECTION SYSTEM

Takaji Suzuki, Kokubunji, and Toshio Ogawa, Hachioji, both of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 316,019

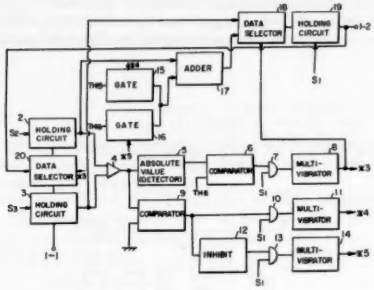
Claims priority, application Japan, Dec. 17, 1971, 46-101896

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.1 B **7 Claims**

1. A signal detection system comprising holding means for holding an electrical signal subjected to sampling, detecting means for detecting the differential between sampled values x_i and x_{i+1} (where i is an integer) held in said holding means, comparing means for comparing the output of said detecting means with a predetermined first threshold value, discriminating means for discriminating the polarity of the output of said detecting means, adding means controlled by the output of said discriminating means for adding a predetermined second threshold value to the sampled value x_i in response to the appearance of the sampled value x_{i+1}, means for applying the result of addition by said adding means to said detecting means for the purpose of detecting the differential between the result of addition and another sampled value x_{i+2}, and means controlled by the output of said comparing means to be connected to said adding means in lieu of said holding means

for deriving the result of addition from said adding means, said result of addition and said sampled value being selectively



derived depending on the appearance or disappearance of the output from said comparing means.

3,848,587

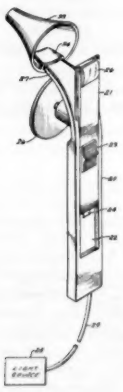
EAR, NOSE AND THROAT EXAMINING INSTRUMENT

Bernard McDonald, 18212 Pacific Coast Hwy., Malibu, Calif. 91265

Filed Nov. 21, 1972, Ser. No. 308,528

Int. Cl. A61b *1/06*

U.S. Cl. 128—9 **8 Claims**



1. An ear, nose or throat (ENT) examining instrument comprising:

an elongated handle;

a non-round speculum support tang at one end of the handle extending at an angle to the length thereof for engaging a socket of a transparent speculum;

a remote light source; and

a fiber optic bundle extending from the light source into the handle and terminating adjacent the end of the tang.

3,848,588

MAGNETOTHERAPEUTIC DEVICES

Joseph Miquel, 7 Rue Simonet, Paris, France

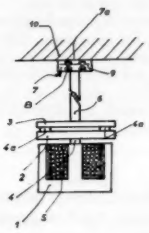
Filed May 31, 1972, Ser. No. 258,337

Claims priority, application France, June 2, 1971, 71.19867; Aug. 4, 1971, 71.28524

Int. Cl. A61h *23/02*

U.S. Cl. 128—41 **1 Claim**

1. A device comprising a head portion having a surface for contact with a selected area of the human body; means detachably connectable to said head portion for effecting reciprocatory or vibratory motion thereto, said means comprising a rod detachably fixed at one end thereof to said head portion, a first plate fixedly connected to the other end of said rod, a second plate comprising a non-deformable material and having substantially the same shape and dimensions as said first plate, struts disposed between the two plates at their periphery to space the two plates apart and fixedly connect them together, an electromagnetic circuit fixed to the center portion of said second plate for effecting reciprocatory or vibratory movement of said second plate, said struts and thereby said first plate said rod and said head portion.



3,848,589

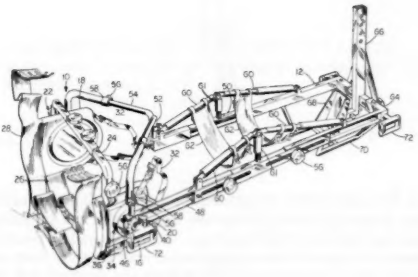
TRACTION SPLINT

Guy C. Throner, 13350 Via Madronas Dr., Saratoga, Calif. 95070

Filed Apr. 9, 1973, Ser. No. 349,024

Int. Cl. A61f *5/04*

U.S. Cl. 128—84 C **14 Claims**



1. A portable orthopedic apparatus for constraining a patient's fractured leg in traction while simultaneously permitting him to assume sitting, reclining, and prone positions and to be moved between bed and wheelchair or the like, comprising

frame means including frame support means for positioning along and supporting a patient's leg and provide an attachment point for traction devices, wherein said frame means comprises inner and outer side bars extending distally from said frame support means to lie along the opposite sides of a patient's leg, a transverse bar interconnecting the distal end area of said side bars, ans traction mounting means attached to said transverse bar,

said frame support means for positioning on the patient at his hip joint area to provide a secure support on the patient for said frame means, wherein the frame support means comprises at least one foundation means for positioning along the patient's body overlying the hip joint,

and means for securing said foundation means to said body so that said foundation means will not move from position when traction is applied to the patient's leg and pivot means pivotally interconnecting said frame means and said frame support means coaxially with the axis through the patient's hip joint for providing pivotal movement between said frame means and said frame support means, and between the patient's femur and the socket therefor, about said hip joint axis,

whereby when a patient is properly placed in traction in said portable orthopedic apparatus, said apparatus enables said patient to freely move between sitting, reclining and prone positions, and while in these positions to be moved about between beds, wheelchairs, and the like, without disturbing the traction forces being exerted on said patient by said apparatus.

3,848,590

INTRAUTERINE DEVICE

Sotiris Kitrilakis, Berkeley, Calif., assignor to Tecna Corporation, Berkeley, Calif.

Filed May 23, 1973, Ser. No. 363,097

Int. Cl. A61f *5/46*

U.S. Cl. 128—129 **5 Claims**

1. In combination, an intrauterine device including an envelope, a loosely knotted filling tube connected to and extending from one portion of said envelope, a cord secured to another portion of said envelope and having at least a partial loop, an inserter rod, and means on said inserter rod contoured to be engaged with and disengaged from said partial loop in said cord.

3,848,591

ELECTRONICALLY-CONTROLLED GAS PRESSURE METER

George Edward Smythe, and Geoffrey Keith Orton, both of London, England, assignors to U.S. Phillips Corporation, New York, N.Y.

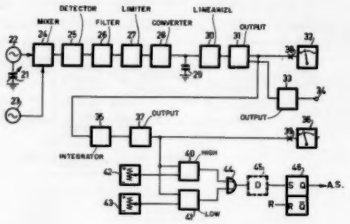
Filed Oct. 13, 1972, Ser. No. 297,187

Claims priority, application Great Britain, Nov. 2, 1971, 50799/71

Int. Cl. A62b *7/00*

U.S. Cl. 128—145.8 **7 Claims**

1. A gas pressure meter suitable for monitoring the gas pressure in a patient's lungs during ventilation of the patient by means of a medical respirator comprising, a pressure transducer for converting said gas pressure into an equivalent electric parameter, a gas tube coupled thereto, a first oscillator which is connected to the transducer so that the oscillation frequency thereof depends upon the instantaneous value of the transducer output, a second oscillator of fixed frequency, mixer circuit means coupled to said first and second oscillators to derive an output signal having a frequency which is equal to the difference frequency of the oscillator frequencies,



a frequency-to-analogue converter coupled to the mixer output for providing an analogue signal proportional to the difference frequency, an integrator, means for applying said analogue signal to the integrator which provides an output signal indicative of the mean value of the gas pressure, and visual pressure indicator means for providing an indication of the analogue signal and of said output signal.

3,848,592

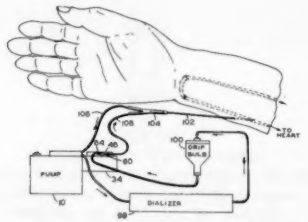
SINGLE NEEDLE ALTERNATING FLOW BLOOD PUMP SYSTEM

Charles B. Willock, 16222 S.E. Oatfield Rd., Milwaukie, Oreg. 97222

Filed Apr. 6, 1973, Ser. No. 348,509

Int. Cl. A61m *01/03*

U.S. Cl. 128—214 R **7 Claims**



1. A single needle alternating flow blood pump system for alternate removal of blood from a blood vessel and return to said blood vessel via a single needle, said system comprising: a blood flow path including a blood pump and tubing means communicating between said needle and said blood pump for withdrawing blood from said blood vessel,

blood receiving means also in said blood flow path through which blood is circulated by said blood pump for subsequent return to said needle,

valve means in said blood flow path by way of which the blood flow is returned to said needle, said valve means being normally closed for impeding the flow of blood to said needle as said pump operates to withdraw blood therefrom,

and means operatively connected to both said pump and said valve means and responsive to a given cyclical condition of said blood pump during pumping operation

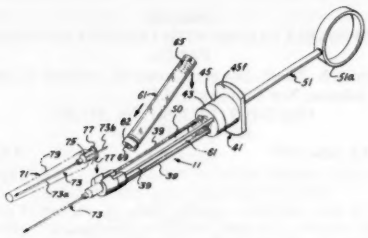
thereof for cyclically interrupting operation of said blood pump to interrupt withdrawal of blood for predetermined time periods after said blood pump has withdrawn substantially equal quantities of blood and for opening said valve means to return said blood to said blood vessel through said needle, whereby blood is alternately withdrawn and returned via the same needle.

3,848,593

SIDE LOADING DISPOSABLE CARPULE SYRINGE

Brian E. Baldwin, Wilmette, Ill., assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.

Continuation of Ser. No. 79,585, Oct. 9, 1970, abandoned. This application Dec. 7, 1972, Ser. No. 312,986
Int. Cl. A61m *5/24, 5/32*
U.S. Cl. 128—218 DA **17 Claims**



1. A syringe adapted for connection of a needle hub having laterally projecting side flanges, comprising

a body adapted to receive a removable carpule having a closed needle-pierceable forward section,

said body having a forward shouldered end, with a carpule-retaining shoulder,

said shouldered end having connecting means thereon for connection of a needle hub thereto,

said shouldered end having a laterally central needle-butt-end-receiving opening and a laterally interconnecting side opening formed therein and extending along and beyond the entire longitudinal thickness of said shoulder for enabling lateral assembly of a butt-end-protruding needle and hub unit with said syringe body,

said body having a transverse needle-hub-flange-securing open-sided non-screw-thread-forming slot having longitudinally oppositely facing longitudinally spaced needle-hub-flange-gripping walls and being formed at said shouldered end and forming said connecting means for receiving and gripping the flanged portion of a flanged needle hub as a function of side insertion of a flanged needle hub through said side opening,

said longitudinally oppositely facing longitudinally spaced needle-hub-flange-gripping walls of said slot having a circumferential angular extent to enable relative rotational motion between a flanged needle hub and said gripping walls after insertion of said flanged needle hub through said flange-securing open-sided slot,

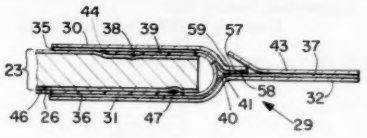
said flange-gripping walls defining said slot being variably spaced along the length of said slot to form both a loose-fitting feed slot zone and a laterally relatively more narrow and closer fitting flange-gripping zone which serves to frictionally secure a flanged needle hub open its rotational movement within said slot to bring its flange portion into opposite gripping wall engagement within said laterally relatively more narrow and closer fitting flange-gripping slot zone angular spaced from and angularly connecting with said loose-fitting feed slot zone.

3,848,594

TAPE FASTENING SYSTEM FOR DISPOSABLE DIAPER

Kenneth Barclay Buell, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 27, 1973, Ser. No. 374,188
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **25 Claims**



1. In a disposable diaper having a back surface and a front surface, an improved tape fastener system, comprising:

a. a front surface portion;

b. first attachment means associated with the front surface portion and the front surface of the diaper for attaching the front surface portion to the front surface;

c. a back surface portion;

d. second attachment means associated with the back surface portion and the back surface of the diaper for attaching the back surface portion to the back surface;

e. a fastening portion; and

f. third attachment means associated with the fastening portion for attaching the fastening portion to another part of the diaper;

g. the front surface portion, the back surface portion, and the fastening portion joined and attached in an area of joinder adjacent the edge of the diaper;

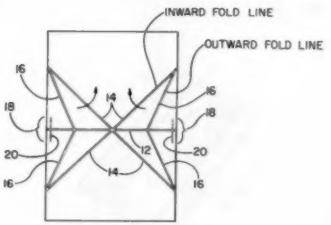
h. whereby forces imposed on the fastening portion are transmitted to both the front and back surfaces of the diaper.

3,848,595

PREFOLDED DIAPER WITH IMPROVED LEG FIT

Dan D. Endres, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 26, 1973, Ser. No. 354,495
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **5 Claims**



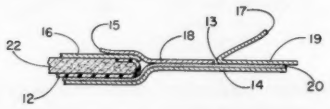
1. In a disposable prefolded rectangular diaper of the wing fold type having top and side edges in which side portions of the diaper are first folded inwardly, in which marginal portions are then folded outwardly, and in which the diaper is further folded approximately in half in the transverse direction; the improvement wherein the facing surfaces of the folded diaper are securely fastened together at each of the side edges in an area closely adjacent the transverse fold in a manner to shorten each of said side edges to prevent extension of the side

edges to full length and to provide downwardly extending fin portions adjacent the transverse fold of each of said side edges, which fin portions are retained when the prefolded diaper is opened up and applied to an infant.

3,848,596
FASTENING TAPE ARRANGEMENT FOR DISPOSABLE DIAPERS

Karl L. Pennau, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed July 2, 1973, Ser. No. 375,816
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **7 Claims**

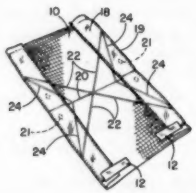


1. In a fastening device for disposable diapers which comprises an elongate strip of pressure-sensitive tape having one end portion secured to a back of the diaper with the unsecured end portion of said tape extending beyond the edge of said diaper and having the pressure-sensitive adhesive surface on the unsecured end portion of said tape covered with a removable protective covering, the improvement wherein the protective covering disposed over the pressure-sensitive adhesive surface on the unsecured end portion of said tape is comprised of at least two separately removable sections, each of said sections separately protecting a different area of the adhesive surface on said unsecured portion whereby when one of said sections is individually removed only that area of the adhesive surface initially protected by the removed section will be exposed and made available for fastening purposes while the remaining area of the adhesive surface on said unsecured end portion remains covered.

3,848,597
PREFOLDED DISPOSABLE DIAPER

Dan D. Endres, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed July 5, 1973, Ser. No. 376,381
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **5 Claims**



1. A prefolded disposable diaper of generally elongate rectangular shape having a central absorbent pad, a fluid permeable face, a fluid impermeable backing, two side edges and two ends; a narrow panel section at each of said edges being folded inwardly to thereby narrow the transverse dimension thereof; the internal face of each of said inwardly folded narrow panel sections being securely attached to the face of said diaper at areas adjacent to and spaced a short distance from the transverse mid-line of said diaper; said narrowed diaper and said folded narrow panel sections being folded in half transversely into diaper half sections with the fluid permeable face portions disposed on the interior of said transversely folded diaper; each of said half sections including said narrow panel sections being folded inwardly on a first pair of diagonal lines starting from near the midpoint of said transverse fold and extending away from each other to the edge of the fold defining said narrow panel section and at a point short of said diaper ends; each of said half sections including said narrow panel section also being folded outwardly along a second pair of diagonal fold lines with each of said fold lines starting at a point on said transverse fold located midway between the center thereof and the edge of the fold defining said narrow panel section and extending to the edge of said panel section fold at approximately the same point as each of said first pair of diagonal folds, the attachment of said narrow panel sections being such that the full width of the inward fold of the narrow panel sections adjacent the transverse mid-line of the diaper is maintained when worn.

3,848,598
DISPOSABLE DIAPER WITH DOUBLE CONTOURED PANEL

Frederick K. Mesek, Downers Grove, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed July 9, 1973, Ser. No. 377,351
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **4 Claims**

1. A multi-layer diaper comprising: a rectangular water-impervious backing sheet; an absorbent batt in juxtaposition with said backing sheet, said batt being smaller than said backing sheet and centrally disposed with respect thereto, said batt comprising a unitary, highly porous, loosely compacted, cellulosic fibrous layer continuous throughout its thickness and having a smaller quantity of fibers in at least two opposite marginal portions of its area than in a central portion therebetween, said batt having a smooth and gradual thickness contour between said marginal portions and said central portion; and a rectangular porous facing layer disposed over said batt, said loosely compacted batt having greater wettability to water than said facing layer.

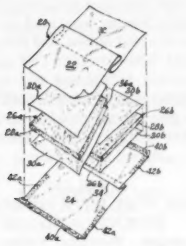
3,848,599
CONTOURABLE DIAPER

Charles H. Schaar, Lake Zurich, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Oct. 12, 1973, Ser. No. 406,140
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **18 Claims**

1. A contourable diaper comprising:
a fluid pervious cover sheet having at least one pleat extending laterally across the cover sheet;
a fluid impervious back sheet having at least one pleat extending laterally across the back sheet; and
a pair of absorbent pads intermediate said cover and back sheets, said pads having overlapping ends in the longitudinal central region of the diaper with the pads being free of attachment in the overlapped region, whereby said pads move longitudinally relative each other and the

diaper transforms from a generally planar shape to an arcuate configuration responsive to longitudinal expan-



sion of the diaper, with the longitudinal sides of the diaper bowing inwardly in the central region of the diaper to generally conform to the contour of an infant's body.

3,848,600

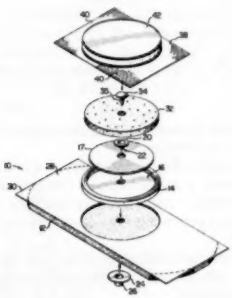
INDIFFERENT ELECTRODE IN ELECTROSURGICAL PROCEDURES AND METHOD OF USE

Charles T. Patrick, Jr., and Charles L. Milligan, both of Centerville, Ohio, assignors to NDM Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 223,107, Feb. 3, 1972, abandoned. This application Jan. 30, 1973, Ser. No. 328,120

Int. Cl. A61n *3/02*

U.S. Cl. 128—303.13 **36 Claims**



1. An indifferent electrode for use in electrosurgical procedures and easily contoured to body surfaces which comprises an electrode-electrolyte assembly including an electrode and an electrolyte composition in which the electrode is an electrically conductive means having at least 0.038 square inch surface thereof in essentially complete contact with said electrolyte composition having at least 2.0 square inches of its conductive surface adaptable to be applied in essentially complete conductive contact with the skin of a patient and having a thickness of at least 10 mils to thus space any part of said conductive means from the skin, said thickness being at least about 165 mils when the conductive element surface area is between about 0.038 and 0.10 square inch, said electrically conductive means, in turn, having a means for electrically connecting said electrode.

3,848,601

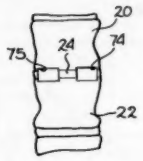
METHOD FOR INTERBODY FUSION OF THE SPINE

Gabriel W. C. Ma, 3501 Kahawalu Dr., Honolulu, Hawaii 96817, and Don E. Poulson, 23 Kalaka Pl., Kailua, Hawaii 96734

Filed June 14, 1972, Ser. No. 262,687

Int. Cl. A61b *17/32*; **B23b** *51/08*, *47/00*

U.S. Cl. 128—305 **6 Claims**



1. The method of performing interbody fusion of the spine between an upper and lower vertebra and across a section of the disc comprising the steps of:

producing a parallelpiped shaped cavity in the spine by:

employing a thin walled hollow chisel of rectangular cross section having exterior dimensions corresponding to the desired rectangular cross section of the cavity and the hollow also being of rectangular cross section;

forcing the chisel a desired depth into the spine thereby cutting the sides of the cavity;

inserting a cylindrical drill bit within the hollow of said chisel and drilling out the greater portion of the tissue defined by the hollow of said chisel and then subsequently removing the remainder of said tissue; and

removing the drill bit from said hollow;

inserting into said cavity a bone plug having dimensions equal to the dimensions of said cavity.

3,848,602

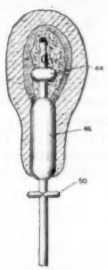
ABORTION FACILITATING DEVICE AND PROCESS

Morton Gutnick, 8329 Fairview Rd., Elkins Park, Pa. 19117

Filed Apr. 19, 1972, Ser. No. 245,310

Int. Cl. A61m *29/00*

U.S. Cl. 128—344 **16 Claims**



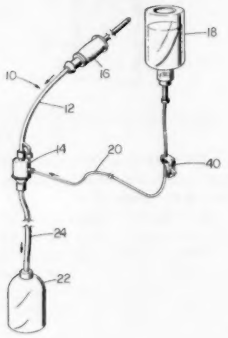
1. A process for performing an abortion to a uterus containing at least one human fetus during approximately the first 24 weeks of pregnancy, comprising steps of:

a. Inserting into the undilated cervix a radially expandable dilating member which is substantially coextensive therewith;

b. Substantially radially uniformly and gradually enlarging the expandable portion of said dilating member by the introduction therein of a fluid until the cervix is dilated an amount in the range from about 1.5 cm. to about 4 cm.;

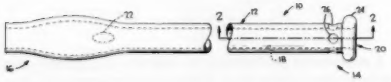
c. Exhausting said dilating member; and
d. Removing said dilating member from the cervix.

3,848,603
ANTISEPTIC CATHETER
Guy C. Throner, 13350 Via Madronas Dr., Saratoga, Calif.
Filed Nov. 2, 1973, Ser. No. 412,310
Int. Cl. A61m *25/00;* **A61f** *5/44*
U.S. Cl. 128—349 R **16 Claims**



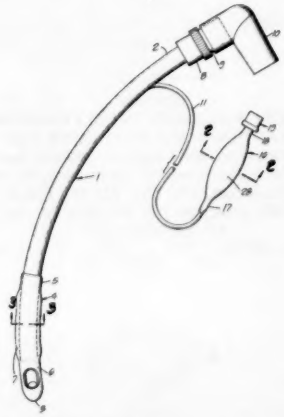
1. An apparatus for preventing infectious organisms from entering the body of a medical patient through or along a catheter for removing body fluids, comprising:
a. a catheter having an inner end portion for insertion into a patient's body and an outer end portion for conducting body fluids to a collection reservoir, and
b. a means for preventing the migration of infectious organisms through and around said catheter from a body fluid flow collection means to a fluid flow discharge source in said body comprising a receptacle having an antiseptic discharge contacting and mixing means in the path of flow of said fluids whereby because of said mixture of antiseptic and body fluids infectious organisms in said body fluids are prevented from migrating through the catheter and into the patient.

3,848,604
SUCTION CATHETER
Marvin A. Sackner, Miami Beach, Fla., assignor to Physician's Medical Patent Development Corporation, Newark, N.J.
Continuation-in-part of Ser. No. 196,602, Nov. 8, 1971, abandoned. This application Feb. 16, 1973, Ser. No. 332,823
Int. Cl. A61m *25/00*
U.S. Cl. 128—350 R **8 Claims**



1. A suction catheter of a size suitable for insertion into a body cavity containing a gas such as the nose, mouth or laryngotracheobronchial tree, comprising an elongated tube formed of a flexible material having a lumen running interiorly thereof, said tube having a distal end with an opening for placing said lumen in communication with the interior of the body cavity and a proximal end adapted to place said lumen in communication with a source of pressure lower than that existing at the distal end of said tube, regulation means for controlling, from said proximal end, the suction applied at said distal end, aperture means near said distal end extending through said tube into said lumen, and flange means extending laterally from said tube adjacent said aperture means and between said aperture means and said opening to maintain said aperture means spaced from the walls of said body cavity thereby aiding in preventing occlusion of said aperture means upon application of suction to said catheter.

3,848,605
ENDOTRACHEAL TUBE WITH IMPROVED INFLATION RETENTION MEANS
Andrew Harautuneian, Westlake Village, and William H. Penny, Arcadia, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Apr. 23, 1973, Ser. No. 353,243
Int. Cl. A61m *16/00, 25/02*
U.S. Cl. 128—351 **6 Claims**



1. In a medical device for insertion into a body passage, comprising, in combination:
an administration tube for insertion in a body passage; said tube including a main balloon circumposed about said tube for inflation and retaining the tube in a relatively fixed position within a body passage during medical treatment;
a branch tube connected at an inner end to the interior of said main balloon for inflating the balloon from outside the body passage;
pilot balloon means connected in series to the main balloon through an outer end of the branch tube for access outside the body passage;
said pilot balloon means comprising an elastic material having expansion properties appreciably greater than the corresponding inflation characteristics of the main balloon whereby inflation of the main balloon causes radical exaggerated inflation of the pilot balloon for immediately apprizing a user of the inflated condition of the main balloon in a body passage; and
inflation valve means connected in series to the pilot balloon for permitting inflation pressure to be administered to the balloons; the improvement including means for permitting the central portion of the pilot balloon to freely expand longitudinally and laterally when inflated, said means comprising a pilot balloon having a free central portion communicating at one end with an elastic

collar of reduced cross-section, said branch tube having bonded to the outer end thereof an enlarged, rigid collar, said elastic collar being stretched in circumposed, air-tight relationship around said bonded collar for obviating the use of adhesives and bonding of the pilot balloon collar to said bonded collar and branch tube.

3,848,606

FETAL EXTRACTOR FOR USE DURING BIRTH

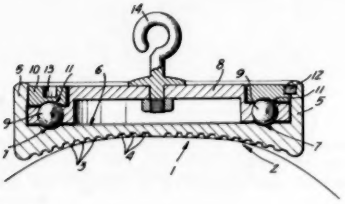
Abraham Chertkoff, 532, 9 de Julio St., Cordoba, Argentina

Filed Aug. 8, 1972, Ser. No. 278,818

Claims priority, application Argentina, Sept. 27, 1971, 238185

Int. Cl. A61b *17/42*

U.S. Cl. 128—352 **5 Claims**



1. A fetal extractor comprising a permanently rigid plate member defining a concave surface, an adhesive substance on said surface for adhering said surface to part of a fetal head, rotatable means opposite said concave surface separate from and engaged with said plate member to move with respect thereto only by rotation about an axis substantially perpendicular to said surface, and means for applying external traction force to said rotatable means to traction the fetus when adhered to said surface.

3,848,607

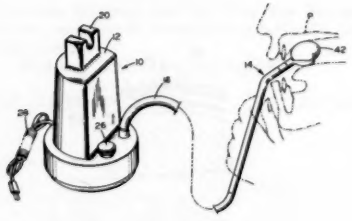
THERAPEUTIC APPARATUS

Mel St. Clair, 31 Byram Shore Rd., Greenwich, Conn. 06830

Continuation-in-part of Ser. No. 193,679, Oct. 29, 1971, abandoned. This application June 8, 1973, Ser. No. 368,073

Int. Cl. A61f *7/00*

U.S. Cl. 128—400 **11 Claims**



1. Therapeutic apparatus for the treatment of congestion, infection and similar conditions in the mouth, nasal passages, sinuses and regions of the head surrounding the mouth comprising: a base having a fluid chamber for receiving and storing a fluid; pumping means connected with the base and communicating with the fluid chamber for pumping the fluid received by the chamber; heating means to heat the fluid pumped from the chamber in the base by the pumping means; flexible fluid conduit means connected at one end with the base to receive the fluid pumped from the chamber and having another end provided with two fluid passageways; and a hand-held applicator connected to the other end of the flexible fluid conduit means to permit the applicator to be manually manipulated remotely of the base, the applicator including a relatively rigid, elongated handle, a hollow pillow formed from a fluid impervious material and coupled directly to one end of the elongated handle for support within the mouth compressed against and conformed to the hard palate and rigid backing means extending between the one end of the handle and the hollow pillow, the hollow pillow also being connected to the other end of the flexible fluid conduit means with the two fluid passageways communicating with the interior of the pillow to permit the pumped and heated fluid to be circulated in and out of the pillow, the pillow being of a bulbous configuration suitable for insertion in the mouth and having a pliable surface portion extending at least from one lateral side of the pillow over the upper part of the pillow pressed against the palate to the other lateral side, the pliable surface portion being smooth to permit efficient transfer of dry heat through the pillow material into the hard palate from the fluid circulated through the interior of the pillow, the rigid backing means having a concave contour, diverging from the axis of the handle at the one end and extending under the pillow to provide support for the pillow along the full periphery of the area of contact between the pliable surface and the palate.

3,848,608

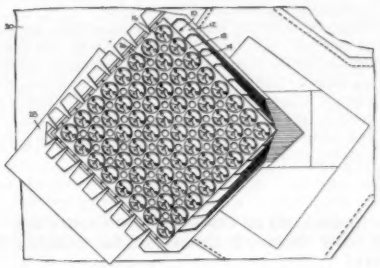
SUBJECT INTEGUMENT SPATIAL STIMULATOR

Charles E. Leonard, So. Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed July 23, 1973, Ser. No. 381,850

Int. Cl. A61n *1/04*

U.S. Cl. 128—419 R **6 Claims**



1. A cutaneous stimulator comprising:

a plurality of pairs of first and second immediately adjacent, noncontiguous contacts,

the plurality of said first contacts being arranged in columns, and

the plurality of said second contacts being arranged in rows, each of said contacts on each respective column being interconnected, and

each of said contacts in each respective row being interconnected;

a ground plane contact means immediately adjacent and noncontiguous to each of said first and second contacts; means for energizing a selected column and a selected row including

first means for providing a first electrical potential between the selected column and said ground plane contact means which is less than the cutaneous breakdown threshold potential,

second means for providing a second electrical potential between the selected row and said ground plane contact

means which is less than the cutaneous breakdown threshold potential,

the sum of said first and second electrical potentials between said selected column and row being greater than the cutaneous breakdown threshold potential.

3,848,609
AXIAL FLOW TYPE HARVESTING MACHINES

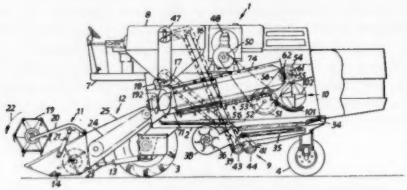
Frans H. Mortier, Maldegem; Gerard O. Jacobs, Ichtegem; Frans J. G. C. Decoene, Zedelgem; August Braet, Beernem, all of Belgium, and Edward W. Rowland-Hill, Lancaster, Pa., assignors to Clayson N. V., Zedelgem, Belgium

Filed June 29, 1972, Ser. No. 267,268

Claims priority, application Great Britain, July 6, 1971, 31576/71; Sept. 21, 1971, 43973/71

Int. Cl. A01f *7/06*

U.S. Cl. 130—27 T **18 Claims**



1. An axial flow type harvesting machine such as a combine harvester having a generally fore-and-aft extending axial flow type threshing and separating mechanism comprising:

a generally fore-and-aft extending casing;

a concave provided in said casing;

rotor means mounted in said casing, the rotor means having a generally cylindrical body portion;

at least one threshing member extending from the surface of said body portion for cooperating with said casing to operate on the crop material to be harvested, the threshing member having an outer rasp bar section and an inner support section, the height of the support section being substantially larger than the height of the rasp bar section and substantially smaller than the radius of the generally cylindrical body portion.

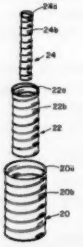
3,848,610
HAIR CURLER CONSTRUCTION AND CASE

Lynn Carol Thomas, 2727 Clay St., San Francisco, Calif. 94111

Filed June 14, 1973, Ser. No. 370,131

Int. Cl. A45d *2/02*

U.S. Cl. 132—39 **8 Claims**



1. In a hair curler of the type having an axially compressible coil-wound resilient metal wire frame the improvement comprising a highly flexible, membraneous hair supporting sleeve shrink-fit conformed around the exterior of said frame so that each portion of the sleeve intermediate adjacent metal portions of the frame forms a smooth, slightly concave surface so that the sleeve is axially collapsible with said frame, said concave surfaces adapted to collapse inwardly to allow adjacent metal portions of said frame to be in near abutment and to provide an unoccupied region in the frame interior.

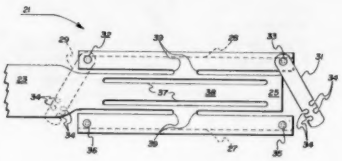
3,848,611
HAIR CUTTING GAUGE

Josephine Q. Asaro, 3627 Plumosa Dr., San Diego, Calif. 92106

Filed July 9, 1973, Ser. No. 377,206

Int. Cl. A45d *24/00*

U.S. Cl. 132—45 **1 Claim**



1. A hair cutting gauge for gauging the residual length of a person's hair after cutting comprising:

a first comb section;

a second comb section; and

adjustable coupling means coupled to said first and second comb sections and operable for coupling said first and second comb sections in parallel disposition and adjustably displaced by approximately the desired residual length of the hair being cut.

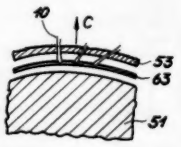
3,848,612
WIG

Erwin Kohler, Ahrensburg near Hamburg, Germany

Division of Ser. No. 724,334, April 26, 1968, Pat. No. 3,589,376. This application Mar. 19, 1971, Ser. No. 126,065

Int. Cl. A41g *5/00*

U.S. Cl. 132—53 **1 Claim**

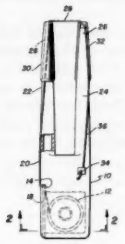


1. A wig, comprising in combination, a support element consisting essentially of a single skin-thin transparent foil of a flexible synthetic resin contoured to substantially a portion of the shape of a head, said foil having an outer surface having a nonreflectant and light absorbing matte finish, and hairs having first end portions which are unknotted and entirely embedded in elongated condition in said foil without extending through said foil and second opposite end portions extending freely outward from said outer surface.

3,848,613
DENTAL FLOSS HOLDER

John F. Sheehan, 318 Charles St., Fitchburg, Mass. 01420

Filed May 31, 1973, Ser. No. 365,472
Int. Cl. A61c 15/00
U.S. Cl. 132—92 R 3 Claims



1. A dental floss holder comprising a pair of elongated tapering self-sustaining arms connected together at corresponding ends and separated at the opposite ends, the latter being free-ended,

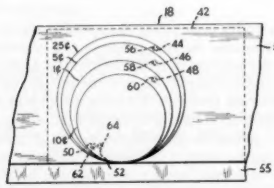
an elongated interiorly tapering hollow cap for each free end portion of each arm, the caps conforming interiorly to the exterior of the respective arm free end portions and closely fitting extending beyond the same, the caps being open at both ends, and being slidably associated with the free end portions of the arms and being selectively removable therefrom,

dental floss applied to each free end portion of each arm and extending under its cap out of the narrower one of the open ends of the cap directly to the corresponding end of the other cap, the floss being clamped between the caps and their arm ends for the entire lengths of the caps, the floss being held taut thereby and by the self-sustaining arms, the caps and the free end portions of the arms being in frictional contact along the entire lengths of the caps, and a floss supply recess, a door therefor, said door being positioned to pinch the floss and apply tension thereto, controlling the feed of the floss from the supply recess.

3,848,614
COIN PROCESSOR HAVING ERROR-INDICATING SYSTEM

Barton C. Conant, Westport, and Szee Ming Yao, Norwalk, both of Conn., assignors to Abbott Coin Counter Co. Inc., Greenwich, Conn.

Filed Dec. 7, 1973, Ser. No. 422,744
Int. Cl. G07d 3/16
U.S. Cl. 133—8 R 11 Claims

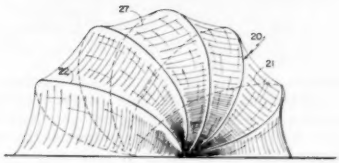


1. A system for providing indication of the presence of foreign matter on the guide rail of an elongate coin chute of a coin processor, said chute supporting first and second sensor means successively longitudinally positioned along said guide rail for respectively generating first and second output signals upon the transit of a coin through said chute, said first and second output signals cooperatively indicating the denominational value of said coin, said system comprising counter circuit means incremented responsively to said first output signal and decremented responsively to said second output signal for generating an output signal upon attaining a preselected count and indicator means operated on the occurrence of each counter circuit means output signal for providing said indication of said presence of foreign matter.

3,848,615
COLLAPSIBLE AND FOLDABLE SHELTER

Gerhardt Allan Warner, and Kurt E. Warner, both of 52 Talbot Ave., Winnipeg, Manitoba, Canada

Filed Feb. 1, 1973, Ser. No. 328,749
Int. Cl. A45f 1/16
U.S. Cl. 135—4 R 4 Claims



1. A collapsible and foldable enclosure comprising in combination a continuous helical coil spring forming a frame and a flexible cover secured to the individual coils of said coil spring, and means to hold parts of said individual coils together on common parts of the perimeter thereof and in consecutive order, said means includes at least one tie member engaging around said common parts of said individual coils, all of said coils passing through said tie member in consecutive order, whereby said frame can be moved from between the open position with the ends engaging a surface thus forming a partial torus, and the closed position with the individual coils in an overlapping relationship of substantially circular configuration, and means to secure said cover to said individual coils thereby defining gores between said individual coils, said continuous helical coil spring transferring the gravitational and aerodynamic load from one individual coil to the other individual coils.

ERRATUM

For Class 135—25 see:
Patent No. 3,848,740

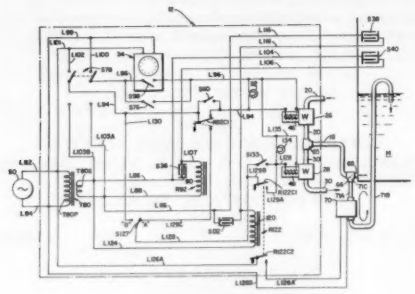
3,848,616
FLUID FLOW CONTROL SYSTEMS

George E. Sanner, Cypress Hill, Md., assignor to Santron Corporation, Towson, Md.

Continuation-in-part of Ser. No. 18,829, Feb. 12, 1970, abandoned, which is a division of Ser. No. 456,787, May 18, 1965, Pat. No. 3,500,844. This application July 18, 1972, Ser. No. 272,793
Int. Cl. H01h 35/18; G05d 9/12
U.S. Cl. 137—78 13 Claims

1. The combination of a receptacle and means for controlling the level of the liquid in said receptacle, comprising: a fluid conduit means communicating with said receptacle; valve means for controlling the flow of fluid through said conduit means; valve actuating means operable in a first mode of operation to actuate said valve means automatically upon

a change of the level of fluid in the receptacle at any time, said valve actuating means being operable in a second mode of operation to actuate said valve means upon a change of the level of fluid in the receptacle within a selected time period, and said valve actuating means being operable in a third mode



of operation to actuate the valve means at any time and irrespective of whether there is a change in the level of fluid in the receptacle; and means for selecting the one of said first, second, and third modes in which it is desired that said valve actuating means be operable.

3,848,617

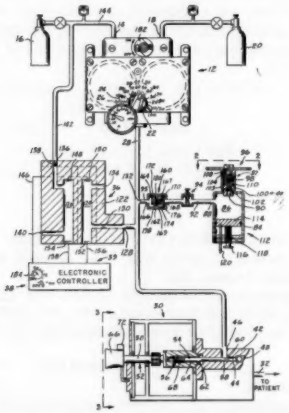
MEANS FOR MAINTAINING A FIXED FLOW THROUGH A BREATHING REGULATOR IN AN INHALATION SYSTEM

Walter L. Dray, Davenport, Iowa, assignor to The Bendix Corporation, South Bend, Ind.

Filed Dec. 29, 1972, Ser. No. 319,422

Int. Cl. A61m *16/00*; **F16k** *37/00*; **G05d** *11/13*

U.S. Cl. 137—88 **12 Claims**



1. In a therapeutic inhalation system having a mixing regulator for mixing a first fluid with a second fluid in a predetermined ratio and delivering a resultant breathable fluid mixture at a flow rate above a predetermined fixed flow rate through a supply conduit to a flow control valve in response to an operational requirement of a recipient, relief valve means controlled by an operator for diverting a portion of said breathable fluid mixture to the atmosphere when said operational requirement of the recipient is below said fixed flow rate to maintain said predetermined ratio, said relief valve means comprising:

adjustable means connected to said supply conduit for allowing an amount of the breathable fluid mixture between said fixed flow rate and a selected flow rate to escape into the atmosphere to maintain said predetermined ratio of fluid mixture at said fixed flow rate through said mixing regulator; and

indicator means positioned by an operator for varying the selected flow rate in the adjustable means in a direct relationship with a change in the flow control valve.

3,848,618

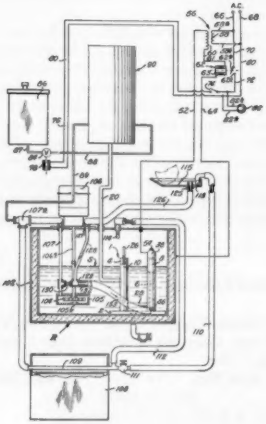
APPARATUS FOR MIXING FLUIDS OF DIFFERENT SPECIFIC GRAVITY

Edwin H. Royse, 4720 Vicksburg St., Dallas, Tex. 75207

Filed Dec. 29, 1972, Ser. No. 319,721

Int. Cl. G05d *11/06*

U.S. Cl. 137—91 **15 Claims**



1. A device for controlling the specific gravity of a solution of first and second liquids comprising: a reservoir; means for admitting the solution into the reservoir; actuated valve means adapted to admit first liquid into the means for admitting the solution into the reservoir; a U-shaped tube in said reservoir, said U-shaped tube having first and second legs, each of said legs being opened to atmosphere; means to admit solution to said first leg to form a column of solution therein; means associated with said first leg to adjust the heighth of the column of solution; control liquid in said second leg forming a column of control liquid therein; and an electrode secured to said second leg, said electrode being engageable by said control liquid to sense changes in the level of the column of control liquid, said electrode being adapted to actuate said actuated valve means.

3,848,619
IMPROVEMENTS IN PRESSURE-RESPONSIVE HYDRAULIC CONTROL VALVE ASSEMBLIES

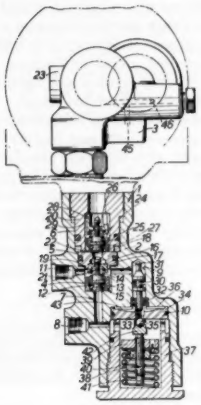
Robin Adam Cochrane, Haseley Knob, England, assignor to Girling Limited, Birmingham, England

Division of Ser. No. 275,352, July 26, 1972. This application June 8, 1973, Ser. No. 368,016

Claims priority, application Great Britain, July 31, 1971, 36100/71

Int. Cl. F16k *31/363*

U.S. Cl. 137—116 **5 Claims**



1. An hydraulic control valve assembly comprising a housing having an inlet, an outlet, a bore communicating with said outlet, and a counterbored recess extending from said bore and communicating with said inlet, an abutment shoulder between said bore and said counterbore, a valve for controlling communication between said inlet and said outlet and comprising a valve member, a stem carrying said valve member, a spring abutment adjustably mounted on said stem, a seating member, a hollow non-adjustable closure member sealingly located within said recess to close said recess and to clamp said seating member against said abutment shoulder, and a compression spring for urging said valve member into engagement with said seating member acting between said closure member and said spring abutment, a piston working in said bore and responsive to fluid pressure in said outlet, and a portion of said piston acting on said valve member through said seating member, said valve member being movable away from said seating member when an opening force generated by said fluid pressure acting on said piston exceeds a predetermined value, and adjustment of said spring abutment with respect to said stem alters the loading of said compression spring whereby said opening force generated by said fluid pressure can be adjusted.

3,848,620
FLUID PRESSURE MODULATOR AND SYSTEM

John F. Fisher, and Burton S. Zeller, both of Jackson, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

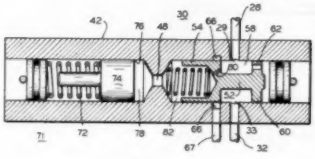
Filed May 14, 1973, Ser. No. 360,203

Int. Cl. F16k *31/12*

U.S. Cl. 137—116.3 **10 Claims**

1. In a system for actuating a fluid pressure operated device, in combination:

a. a pressure modulator including a housing having an elongated, substantially uniform diameter opening therein with a closed end, a spool member movable within said opening, a first land portion on said spool member near said closed end and having an aperture therethrough, a second land portion on said spool member, spaced from said first land portion and forming with the inner surface of said opening and said closed end, via said first land portion aperture, a variable volume substantially uniform diameter chamber, a fluid inlet port communicating with said chamber and arranged to admit pressurized fluid to the chamber, a fluid outlet port operatively connecting said chamber with said device, a vent in said housing connected with said opening, one end of said spool member abutting the said closed housing end when said modulator isn in a quiescent position and means for resisting an increase in the volume of said chamber, the said spool member being arranged to move away from the said closed housing end in response to an increase in fluid pressure in the said chamber, the said vent being arranged



to be normally covered by the said second land portion and to be uncovered when the said spool member moves more than a predetermined distance, with the said land portions being spaced apart in a manner so as to permit the regulation of fluid pressure by controlling only the fluid volume outflow from said chamber;

b. an accumulator including another housing having another elongated opening and having another closed end, a piston movable within said another opening, resilient means interposed between said another closed end and said piston and a passageway between said modulator and accumulator permitting only fluid communication between said accumulator and said modulator chamber, whereby an increase in pressure in the said chamber, to an amount above a predetermined value, causes said spool member to uncover said vent port and an increase in pressure in said chamber causes a build-up of pressure in said accumulator; and

c. multiple bias means responsive to the said build-up of pressure in said accumulator causing said spool member to move back again toward its quiescent position.

3,848,621
DOUBLE BLOCK AND BLEED GATE VALVE TO CONTROL UNIDIRECTIONAL METER PROOVER SPHERE

Harvard G. Dickenson, Tulsa, Okla., assignor to Valve Specialty Supply, Inc., Tulsa, Okla.

Filed Dec. 17, 1973, Ser. No. 425,230

Int. Cl. G01f *25/00*

U.S. Cl. 137—268 **8 Claims**

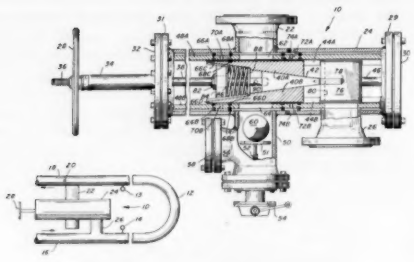
1. A sphere launcher for a meter prover system comprising:

a. a horizontal chamber having at least one inlet opening on its upper surface, and at least one outlet opening on its lower surface, displaced horizontally from each other;

b. means connecting said outlet opening to the inlet pipe of a meter prover loop, placed below said outlet, and means connecting the outlet pipe of said prover loop, above said chamber inlet, to said inlet;

c. seal means and sphere catcher means inside said chamber, arranged so that when said sphere catcher means is

aligned with said outlet, said seal means is sealing said inlet, and means to move said seal means and sphere catcher means so that said sphere catcher means is aligned sequentially with said inlet and said outlet; and wherein



d. said seal means including wedge means to force sealing surfaces outwardly in contact with sealing rings to seal said inlet from said outlet.

3,848,622

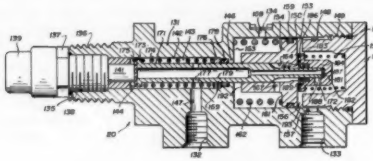
TEMPERATURE MODULATED PRESSURE REGULATING VALVE

Gordon F. Cummings, III, Rockford, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 307,883, Nov. 20, 1972, Pat. No. 3,804,217. This application Sept. 14, 1973, Ser. No. 397,491

Int. Cl. F16k *17/38*; **G05d** *23/00*

U.S. Cl. 137—468 **1 Claim**



1. A thermally responsive pneumatic pressure regulating valve for providing a regulated pressure head inversely proportional to a temperature signal, said valve having a body including a supply chamber and a regulating chamber spaced from each other, an inlet port communicating with said supply chamber adapted for connection to a source of fluid pressure, an outlet port communicating with said regulating chamber adapted for connection to control apparatus, and a vent port spaced from said outlet port;

a temperature sensor mounted in said body having a portion extending externally thereof in communication with said temperature signal and including a movable portion disposed within said supply chamber, said movable portion being adapted for extensile movement in response to temperature rise;

an annular balance piston slidably mounted within said body between said outlet port and said vent port including a central aperture, one face of said piston being adjacent said outlet port defining one end of said regulating chamber, said one piston face including a first annular valve seat surrounding said central aperture;

a regulating spring disposed between an opposite face of said piston adjacent said vent port and a shoulder formed in said body adjacent said supply chamber, said regulating spring biasing said piston against the force of a regulated pressure in said regulating chamber;

an elongated hollow slideable plunger mounted in said body extending through the central apertured portion of said piston, said plunger having a first end portion thereof disposed within said supply chamber engageable with said movable portion of said temperature sensor, said first end portion including a passage communicating the interior of said plunger with said supply chamber, said plunger having a second end portion thereof disposed within said regulating chamber including a second annular valve seat defined thereon; and

a movable pilot member disposed in said regulating chamber having a flange portion including a first annular sealing surface adapted for engagement with said first annular valve seat of said piston and having a socket portion including a second annular sealing surface adapted for engagement with said second annular valve seat of said plunger, said pilot member being resiliently urged toward sealing engagement with said piston, being movable out of engagement with said first annular valve seat in response to extensile movement of said plunger for bleeding pressure fluid from said regulating chamber through said central aperture of said piston member, said second sealing surface being separated from said second valve seat in response to retractile movement of said plunger for admitting pressure fluid to said regulating chamber.

3,848,623

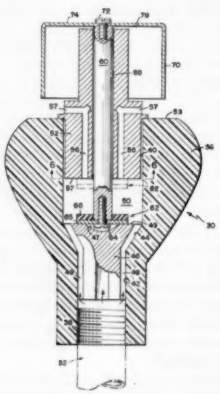
AIR TRAP

Harold J. Schramm; John R. McCullough, and Joseph P. Yarnall, Jr., all of West Chester, Pa., assignors to Schramm, Inc., West Chester, Pa.

Filed Sept. 5, 1972, Ser. No. 286,008

Int. Cl. F16t *1/30*

U.S. Cl. 137—186 **9 Claims**



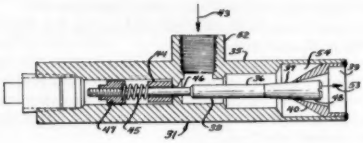
1. For use in a system for producing bubbles in which an elongated conductor has an internal passage to which gas is supplied thereto from a compressor and a plurality of openings along its length for allowing gas to flow outwardly from its internal passage to produce bubbles, an air trap to allow liquid to flow readily from the internal passage upon the supply of gas thereto from the compressor comprising a valve body, an inlet means adapted to be connected to the internal passage of the conductor, an outlet means for discharging fluid to the exterior of said valve body, passageway means interconnecting said inlet and outlet means, a valve member

constructed and arranged for opening and closing said passageway means and movable between a first position in which said passageway means is open and a second position in which said passageway means is closed, and means responsive to the discharge of gas from said outlet means to actuate said valve member to said second position closing said passageway means, and including means responsive to pressure of the gas upstream of said valve member when said valve member is in said second position for holding said valve member in said second position as long as said pressure is maintained, and means for moving said valve member to its first position when said pressure is released.

3,848,624
SELF-CLEANING VALVE FOR REFRIGERATING APPARATUS

Ronald A. Banike, Elmhurst, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.

Filed Sept. 29, 1972, Ser. No. 293,408
Int. Cl. F16k *25/00*; **F25d** *3/12*
U.S. Cl. 137—242 **2 Claims**



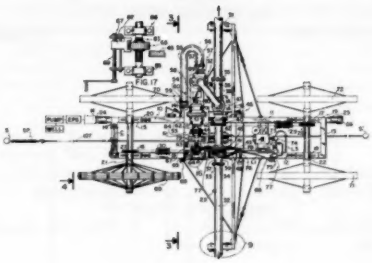
1. A self-cleaning valve for a liquid refrigerant that also exists as a solid, comprising: a valve body having an inlet and an outlet for flow of said refrigerant therethrough in a downstream direction; a valve movable part in said body mounted for movement along a longitudinal axis and having an annularly tapered substantially rigid valve opening and closing surface; and an annular valve seat part having a substantially rigid seal surface for sealingly engaging said rigid tapered closing surface, said movable part moving in said downstream direction to open the valve and modulate refrigerant flow therethrough, said valve seat rigid seal surface comprising a scraping portion for engaging the tapered surface of said movable part, said scraping portion converging in an upstream direction toward said axis whereby the opening and closing movements of the movable part result in the scraping portion scraping solid refrigerant from that portion of the movable valve surface disposed upstream from the area of sealing engagement in the valve closed position.

3,848,625
PRIME MOVER FOR AND IN WHEEL-LINE IRRIGATION APPARATUS

Burr Courtright, LaGrande, Oreg., assignor to CH_2O, Inc., LaGrande, Oreg.

Filed Nov. 7, 1973, Ser. No. 413,704
Int. Cl. A01g *25/02*; **B05b** *3/12*
U.S. Cl. 137—344 **12 Claims**

1. An agricultural, side-roll wheel-line prime mover, including in combination: a frame; forward and rearward, parallel, mutually spaced axles journaled to said frame; wheels mounted upon each of said axles; transverse, central, water-delivery, wheel-line conduit journaled to said frame for axial revolvement; water inlet structure affixed to said frame; water-pressure-to-mechanical-torque converter means mounted to said frame and having a revolvable output drive, a fluid inlet coupled to said water inlet structure, and a fluid inlet, said wheel-line conduit including wall-aperture passageway means; stationary means in part surrounding and sealing said wheel-line conduit over and at opposite sides of said passageway means and coupled to said fluid outlet for passing fluid from said converter means into said wheel-line conduit, for water-

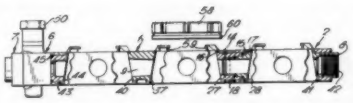


delivery irrigation thereby; revolvable torque-responsive means mounted upon and keyed to said central conduit for imparting revolvement to the latter; and mechanical means coupled to and between said revolvable output drive and said torque responsive means for imparting torque to the latter to thereby revolve the same and said wheel-line conduit.

3,848,626
MEANS FOR COUPLING FLUID CONTROL COMPONENTS IN FLUID LINES

Leslie William Smith, Shipston-on-Stour; Michael John Wates, Bishampton, and Robert John Tait, Shipston-on-Stour, all of England, assignors to C. A. Norgren Co., Littleton, Colo.

Filed July 19, 1973, Ser. No. 380,885
Claims priority, application Great Britain, July 18, 1972, 33500/72
Int. Cl. F16k *11/10*
U.S. Cl. 137—269 **9 Claims**



1. In apparatus for supporting and connecting fluid control and/or conditioning units to permit flow of fluid through such units in series wherein said apparatus includes at least one pair of frames each capable of supporting at least one of said units in a position so that fluid inlet and outlet ports of each said unit are within the frame, each of said frames having local peripheral openings via which fluid can flow to and from a unit located in said frame, the improvement comprising:

at least one pair of tubular insert components which are insertable through two of said peripheral openings, one in one frame and one in the other frame, said insert components having:

sealing faces for co-operating with sealing faces of said units in said frames; and

co-operating means to provide a fluid path from a unit in one frame to a unit in the other frame.

3,848,627

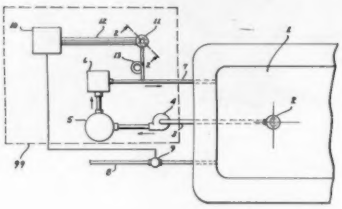
APPARATUS FOR MAINTAINING THE WATER LEVEL WITHIN A SWIMMING POOL TO PREDETERMINED LIMITS

Littleton D. Page, Rt. 2, Box 798, Tucson, Ariz. 85715

Continuation-in-part of Ser. No. 220,976, Jan. 26, 1972, Pat. No. 3,759,286. This application July 20, 1973, Ser. No. 381,360

Int. Cl. G05d 9/12

U.S. Cl. 137—392 2 Claims



1. In a system for automatically maintaining the water level in a swimming pool having a suction line, a pump and a return line, and including a makeup water line connecting the return line to a source of makeup water under pressure, a normally closed, electrically actuated valve disposed in said makeup water line, a level sensing chamber positioned with respect to the swimming pool such that a normal range of pool water level falls intermediate the ends thereof, said sensing chamber having a fluid sealed lower end, an upper end thereof having a vent aperture for communicating with the atmosphere, means for placing the interior of said sensing chamber in direct liquid communication with said return line, a plurality of vertically separated level sensing probes extending into the interior of said sensing chamber, said plurality of level sensing probes including at least a lowermost common probe, a low water level probe positioned above said common probe, and a high water level probe positioned above said low water level probe, control means connected to said plurality of probes and to said valve for sensing a first condition in which no conductive path exists between said common probe and said low water level probe and responding to said first condition by energizing said electrically actuated valve to initiate the introduction of makeup water in the pool, said control means further sensing a second condition in which a conductive path exists between said common probe and said high water level probe and responding to said second condition by de-energizing said electrically actuated valve to terminate the introduction of makeup water into the pool, the improvement comprising in combination:

a. means for directing the flow of makeup water from the end of said makeup water line in a downward vertical direction;

b. an apertured base being vertically downwardly displaced from the end of said makeup line and having an aperture in general vertical alignment with the end of said makeup line for channelling the makeup water flowing from said makeup line through said apertured base;

c. a connecting pipe disposed intermediate said apertured base and said return line for conveying the makeup water to the return line; and

d. a float valve disposed within said connecting pipe and responsive to the water level therein for sealing said aperture when the water level within said connecting pipe nears said aperture; whereby, said float valve in combination with the air gap intermediate said apertured base and the end of the makeup line impedes the flow of water from said pool through said return line and said connecting pipe into said makeup water line.

3,848,628

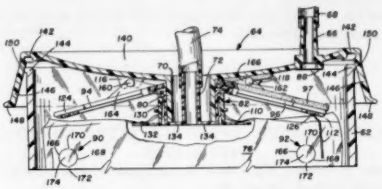
DISPOSABLE SAFETY FLOAT VALVE

David W. Deaton; Stephen M. Brower, both of Dallas, and Marshall P. Durham, Jr., Desota, all of Tex., assignors to Deaton Medical Company, Dallas, Tex.

Filed Aug. 9, 1972, Ser. No. 279,062

Int. Cl. F16k 33/00

U.S. Cl. 137—434 5 Claims



1. A float valve operable between open and closed positions in response to fluid level within a fluid container having a lid with a vacuum inlet formed therethrough comprising: a projection extending from the underside of the lid

an elongated strip of flexible material having low fluid absorption characteristics,

a portion of said flexible strip having structure for being frictionally and detachably connected to said projection extending from the underside of the lid, said strip having a length greater than the distance from said projection to the vacuum inlet

said strip having a free end which normally hangs below the vacuum inlet due to bending of said flexible strip when the fluid level within the fluid container is below a predetermined level,

said free end having sufficiently low fluid absorption characteristics to float on the fluid when the fluid reaches the predetermined level within the container to bend upwardly to obstruct the vacuum inlet to prevent the fluid from being drawn through the vacuum inlet.

3,848,629

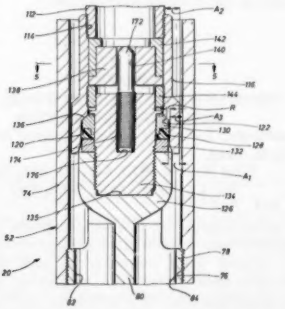
LOW FLOW SAFETY VALVE WITH PRESSURE LOCK

David E. Young, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 31, 1972, Ser. No. 302,545

Int. Cl. F16k 17/64

U.S. Cl. 137—459 25 Claims



1. A safety valve apparatus comprising:

an inner member movable between longintudinally spaced

positions within an outer member, said members defining a flow passage;

valve means for closing said flow passage in one position of said inner member, said flow passage being open in the other position of said inner member;

means operable under normal flow conditions for maintaining said inner member in said other position;

means for shifting said inner member to said one position when the flow of fluids falls below a predetermined minimum rate;

pressure sensitive means operable upon closure of said valve means and being responsive to upstream pressure for retaining said inner member in said one position; and second pressure sensitive means normally being disposed in inoperative relation to said pressure sensitive means and being selectively operable to combine with said pressure sensitive means and allow upstream pressure acting thereupon to develop a resultant force urging said inner member toward said other position.

3,848,630

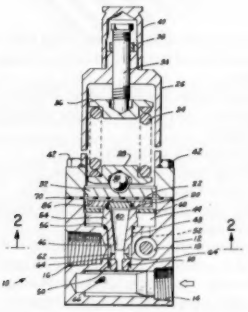
RELIEF VALVE

Irvin B. Weise, Bellaire, Tex., assignor to Anderson, Greenwood & Company, Houston, Tex.

Continuation of Ser. No. 220,769, Jan. 26, 1972, abandoned. This application Oct. 2, 1973, Ser. No. 402,739

Int. Cl. F16k *31/36*

U.S. Cl. 137—475 **6 Claims**



1. A pilot valve, comprising

a valve body,

said valve body defining an inlet port, a control pressure port, an outlet port, and a communication from said inlet port to said control pressure port and to said outlet port, means in said communication defining a valve seat between said outlet port and said other two ports,

a valve member positioned within said communication and adapted to engage and disengage from said valve seat to control flow therethrough,

means biasing said valve member toward engagement with said valve seat,

pressure responsive means exposed to the fluid pressure immediately downstream of said valve member and having an effective pressure area larger than said valve member,

said pressure responsive means being associated with said valve member and said biasing means to exert a force against said baising means when said valve member cracks open to assure that said valve member snaps to full open position on opening,

said body defining a diaphragm chamber surrounding said valve seat and in communication with said outlet port,

said pressure responsive means being a diaphragm exposed to the fluid pressure within said diaphragm chamber, and means positioned within said diaphragm chamber for converting the kinetic energy of fluid flowing therein when said valve member is out of engagement with said valve seat to static pressure to assure a positive snap action of said valve member to full open position when it first opens,

said diaphragm chamber being cylindrical,

said valve member being hexagonal and moving within said diaphragm chamber with the corners of said hexagonal valve member lightly guiding the movement of said valve member within said diaphragm chamber without binding and sticking.

3,848,631

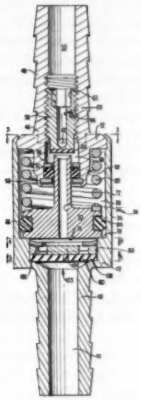
BEER KEG PROTECTIVE DEVICE

Merton R. Fallon, Thousand Oaks, Calif., assignor to Draft Systems, Inc., Northbridge, Calif.

Continuation of Ser. No. 82,783, Oct. 26, 1970, abandoned. This application Feb. 5, 1973, Ser. No. 329,330

Int. Cl. F16k *31/365*

U.S. Cl. 137—505.11 **1 Claim**



1. A pressure control device for disposition in a gas passage between a gas pressure source and a pressure vessel comprising:

an elongated housing having a gas inlet, a gas outlet, a first chamber and a valve seat; said inlet lying in communication with said first chamber and including an element receivable therein having an axial passageway and at least one radial aperture for delivery of gas from said passageway through said aperture into said chamber, the inner end of said element comprising said valve seat; a piston in said housing, said piston having a passage therethrough in communication on one side thereof with a second chamber defined at least in part by said housing and the face of said piston, said piston being movable axially betweeen first and second positions, said second chamber lying in communication with said housing outlet; said piston having a stem defining a part of the passage through said piston, said stem having an annular end defining an inlet for the passage through said piston; a spring for biasing said piston into said first position; said piston in said first position establishing communication between said first chamber and the passage in said piston for permitting flow of gas from said housing inlet through said chamber, the passage in said piston, and the second chamber to said outlet for pressures in said second chamber less than or equal to a predetermined pressure; said piston, in response to a gas pressure in said second chamber in excess of the predetermined pressure and acting thereon adjacent said outlet, being movable against the

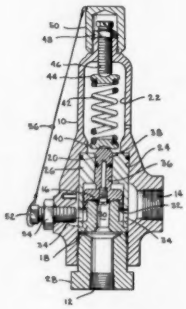
bias of said spring into said second position to seal said annular end of the piston stem against said seat thereby to preclude transmission of gas through the passage in said piston; said spring biasing said piston for movement from said second position to said first position, said piston being movable into said first position by said spring in response to a pressure in said second chamber less than or equal to the predetermined pressure, means for venting said first chamber externally of said housing in response to a pressure therein greater than the predetermined pressure, said venting means including an annular member forming an outer wall portion for said first chamber and movable axially in said housing between first and second positions, said member in said first position forming a seal with said housing for precluding venting said first chamber, means for biasing said member into said first position, means carried by said member and responsive to a pressure in said first chamber greater than said predetermined pressure for moving said member axially against said biasing means into said second position to vent said first chamber between said member and said housing; means cooperable between said housing and said element for adjusting the axial position of said element in said housing inlet and hence the axial spacing between said valve seat and the annular end of said stem in said first position of said piston, and a check valve carried by said housing adjacent said outlet and downstream of said piston for precluding backflow through said device, said check valve including a seat and a flexible member having an opening therethrough, said flexible member being downstream of said seat and engageable thereagainst to seal about said opening.

3,848,632

VALVE

Walter W. Powell, Houston, Tex., assignor to Anderson, Greenwood & Co., Bellaire, Tex.

Filed Oct. 9, 1973, Ser. No. 404,279
Int. Cl. F16k *15/06*
U.S. Cl. 137—514 **6 Claims**



1. A valve, comprising

a body defining an inlet, an outlet and a valve seat surrounding communication between said inlet and said outlet,

a valve member positioned within said body and adapted to move within said body to open and close flow through said valve seat,

said body defining a bore,

a portion of said valve member extending into and reciprocating within said bore,

said valve member portion defining a groove facing said bore,

an O ring positioned in said groove and adapted to be in sliding engagement with the walls of said bore, and

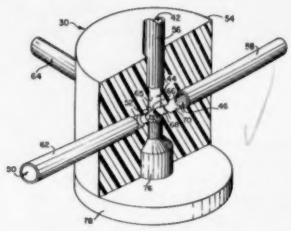
means providing pressure communication from the part of said valve member exposed to inlet fluids to the interior of said groove whereby fluid pressure forces said **0** ring against the walls of said bore to create a damping drag against the movement of said valve member.

3,848,633

PRECISE FLUID-DIVIDING APPARATUS

Carl R. Hurtig, Scituate; Robert L. Kent, Andover, and Leo J. Blumle, Milton, all of Mass., assignors to Damon Corporation, Needham Heights, Mass.

Filed Oct. 22, 1971, Ser. No. 191,611
Int. Cl. G01n *1/18*
U.S. Cl. 137—561 A **8 Claims**



1. Apparatus for dividing flowing fluid with precision into a number of portions of selected relative volumes, said apparatus comprising

A. an input conduit for fluid to be divided,

B. a plurality of output conduits for receiving said portions of said fluid,

C. means forming a chamber

1. having an outer wall of circular cross section oriented with the center along a vertical axis,

2. having said input conduit feeding thereinto along said vertical axis,

3. having said output conduits feeding out from said outer wall at a common level along said axis, and

4. providing symmetrical fluid passages therethrough from said input conduit to said output conduits, and

D. a conical member disposed in said chamber with the cone axis coincident with said vertical axis, with the apex of said conical member pointed toward said input conduit, and with the conical surface thereof forming at least a portion of the chamber surface spanning said outer wall opposite said input conduit and being located along said axis at the level at which said output conduits feed out from said outer wall.

3,848,634

FLUID CONTROL SYSTEM FOR CONTROLLING INTRAVENOUS FLOW RATE

Douglas G. Noiles, New Canaan, Conn., assignor to United States Surgical Corporation, Baltimore, Md.

Filed Aug. 16, 1972, Ser. No. 280,948
Int. Cl. F16k *7/06*
U.S. Cl. 137—601 **8 Claims**

1. A fluid control system for controlling the flow rate of a parenteral fluid from a parenteral fluid reservoir to means for feeding the parenteral fluid into a patient's body, comprising:

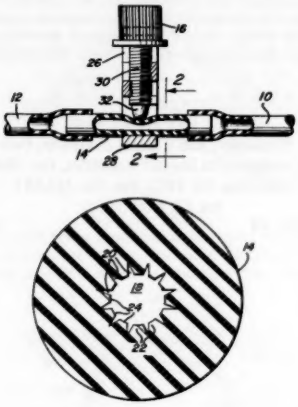
first conduit means for passing parenteral fluid therethrough;

second conduit means for passing parenteral fluid therethrough in spaced relation to said first conduit means;

third conduit means comprised of a resilient material having an interior opening of non-circular cross section, said interior opening having a shape such that compression of said third conduit means forms a plurality of parallel,

longitudinally extending flow passages each of which is in parenteral fluid communication with said first and second conduit means; and

a compression clamp in operative relationship with said third conduit means for transaxially compressing said third conduit means to form said plurality of flow passages and for varying the combined cross-sectional area of said flow passages between a maximum and a minimum, said compression clamp having means for manually setting the extent of compression on said third conduit means, said compression clamp further capable of maintaining said compression substantially constant until manually reset, said third conduit means and said compression clamp together forming a valve which is suitably sized for controlling the flow rate of said parenteral fluid and for maintaining said flow rate substantially constant during a predetermined time period.



3,848,635

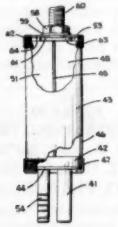
FLUID DISTRIBUTOR APPARATUS

Edward D. Scheffler, Jr., Coloma, Mich., assignor to AG Tec Inc., Indianapolis, Ind.

Filed Feb. 26, 1973, Ser. No. 336,017

Int. Cl. A01h *17/08*

U.S. Cl. 137—610 **7 Claims**



1. Fluid distributor apparatus comprising:

a body having a fluid inlet means, a plurality of fluid outlet means, flow splitter means having leading edges intersecting at a point in registry with said inlet means to split the fluid flowing into said body into at least two paths, a different one of said outlet means communicating with each of said paths, the relative location of intersection of said edges with respect to said inlet means being changeable to change the proportions of inlet fluid flowing through the different outlet means.

3,848,636

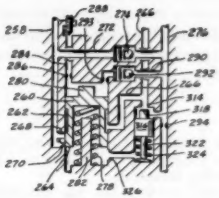
CONTROL APPARATUS PARTICULARLY FOR A PLURALITY OF COMPRESSOR BLEED VALVES OF A GAS TURBINE ENGINE

Howard L. McCombs, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Sept. 15, 1972, Ser. No. 289,404

Int. Cl. F17d *3/00*

U.S. Cl. 137—624.27 **8 Claims**



1. Control apparatus for controlling a control output signal for a predetermined interval of time in response to an input signal comprising:

input signal generating means for generating a control input fluid pressure signal;

output passage means providing an output fluid pressure signal;

a first source of pressurized fluid;

a second source of pressurized fluid at a lower pressure relative to said first source;

conduit means providing communication between said first and second sources and including a first check valve and a flow restriction downstream from said check valve;

first fluid pressure responsive valve means having first and second positions for venting said output passage means to one of said first and second sources depending upon the position of said valve means;

said first fluid pressure responsive valve means being vented to said conduit means intermediate said check valve and said flow restriction and responsive to pressurization thereof;

first resilient means operatively connected to said first fluid pressure responsive valve means for actuating the same to said first position to vent said output passage means to said second source;

normally closed second valve means in said conduit means for controlling flow therethrough;

second fluid pressure responsive means responsive to said input fluid pressure signal for actuating said second valve means;

second resilient means operatively connected to said second fluid pressure responsive means for actuating the same to a closed position;

first passage means communicating with said second fluid pressure responsive means and adapted to be vented by said first fluid pressure responsive valve means to one of said first and second sources depending upon the position of said first valve means;

said second valve means being actuated by said second fluid pressure responsive means to an open position in response to said control input fluid pressure signal to pressurize said check valve to an open position and pressurize said first fluid pressure responsive valve means against the resistance of said first resilient means thereby actuating

said first fluid pressure responsive valve means to said second position to simultaneously vent said first source of pressurized fluid to said output passage means and said first passage means to establish said output fluid pressure signal and pressurize said second fluid pressure responsive means to actuate said second valve means to a closed position;

said closed second valve means disestablishing communication between said first source and said conduit means whereupon said check valve is actuated to a closed position;

said first resilient means urging said first fluid pressure responsive valve means against the opposing pressurized fluid intermediate said check valve and said flow restriction which opposing pressurized fluid is forced through said flow restriction to restrict movement of said first fluid pressure responsive valve means to said first position to a predetermined velocity;

said first fluid pressure responsive valve means being operative to vent said output passage means to said first source over the major portion of its range of movement from said second to said first position.

3,848,637

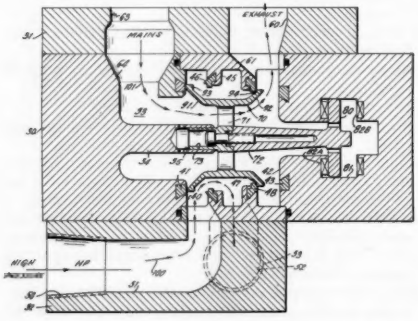
HIGH SPEED FOUR-WAY VALVE

George A. Wilson, Pineville, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed May 7, 1973, Ser. No. 357,666

Int. Cl. F16k *11/02, 11/07*

U.S. Cl. 137—625.27 **5 Claims**



1. A high speed, four-way valve comprising, in combination:

a valve body having a central chamber;

a hollow cylindrical valve sleeve disposed within said central chamber and movable therein in a direction along its axis; said sleeve having first and second, third and fourth serially disposed and axially spaced annular seal elements; said first and third annular seal elements facing toward one axial direction of said sleeve; said second and fourth annular seal elements facing toward the other axial direction of said sleeve;

first, second, third and fourth serially disposed and axially spaced stationary annular seals fixed within said central chamber and sealingly engageable, respectively, with said first, second, third and fourth annular seal elements; said first and third annular seal elements simultaneously engaging said first and third stationary annular seals, respectively, when said valve sleeve is in a first axial position; said second and fourth annular seal elements engaging said second and fourth stationary annular seals, respectively, when said valve sleeve is in a second axial position; and first, second, third and fourth ports extending through said valve body and into said central chamber; said first port communicating with the hollow interior of said cylindrical valve sleeve; said second port communicating between said first and second stationary annular seals; said third port communicating between said second and third stationary annular seals; said fourth port communicating between said third and fourth stationary annular seals;

said sleeve having first and second enlarged diameter end regions; the outer axial ends of said first and second enlarged diameter end regions defining said first and fourth annular seal elements; interior regions of said first and second enlarged diameter end regions opposing said first and fourth annular seal elements defining said second and third annular seal elements, respectively.

3,848,638

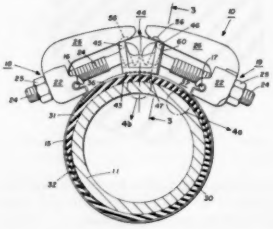
PIPE REPAIR CLAMP

William L. Huslander, and Charles J. Glover, both of Bradford, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed May 24, 1973, Ser. No. 363,694

Int. Cl. F16l *55/16*

U.S. Cl. 138—99 **10 Claims**



1. In a pipe repair clamp including a flexible band for encircling a substantial circumferential portion of pipe section to be repaired, lug means secured to each of the circumferential opposing ends of said band, held bolt fasteners engageable with said lug means on the respective band ends and adapted to apply a generally circumferentially effective first force for tightened installation takeup of said band about a contained pipe section, a spanner plate positioned circumferentially encircling a portion of pipe section between the opposing ends of said band and gasket means circumferentially underlying said band and spanner plate for engagement against the peripheral surface of a contained pipe section, force applicator means adapted to cooperate with said lug means and responsive to tightened installation takeup of said band to apply a second force separately effective from said first force for locally increasing radially inward clamping force between said gasket and said spanner plate at a location on said spanner plate circumferentially intermediate said lug means.

3,848,639

PIPE RESTRAINING DEVICE

Tsuan-Tong Chen, 4001 W. Kirk, Skokie, Ill. 60076

Filed July 12, 1973, Ser. No. 378,779

Int. Cl. F16l *9/18, 3/04*

U.S. Cl. 138—103 **9 Claims**

1. A pipe movement restricting device comprising:

a pipe,

a pedestal structure,

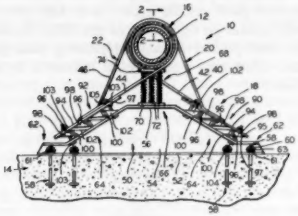
a sleeve proportioned to freely receive said pipe and be spaced from contact with same,

said sleeve being supported on said pedestal in a position to be substantially concentric with said pipe,

a first tie band looped about said sleeve in the plane thereof

and having its ends anchored to said pedestal on one side of said pedestal,

and a second tie band looped about said sleeve in the plane thereof and having its ends anchored to said pedestal on the other side of said pedestal,



said tie bands being tensioned against said sleeve to press same against said pedestal and hold said sleeve in spaced relation about the pipe from divergent directions.

3,848,640

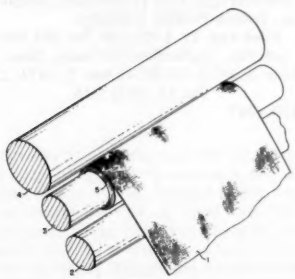
TUBING MADE FROM B-STAGED EPOXY RESIN COMPOSITION

Thomas G. Crawford, Hampton, and William E. Kearse, Fairfax, both of S.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 188,803, Oct. 13, 1971, abandoned. This application Feb. 6, 1973, Ser. No. 330,155

Int. Cl. F16l *9/16*

U.S. Cl. 138—145 **14 Claims**



1. A tube comprising a cured cylinder formed from a plurality of wrapped concentric layers of a treated cloth, said treated cloth comprising a fabric impregnated with an epoxy resin composition having a greeness of about 6 to 35percent, said composition comprising about 55 to 75 percent epoxy resin having an average epoxy equivalent weight of about 220 to 365 and about 25 to about 45 percent trimellitic anhydride, the composition initially dissolved in a solvent for the trimellitic anhydride and the fabric initially cured to the B-stage.

3,848,641

WEFT INSERTER FOR TRAVELLING-WAVE SHEDDING LOOMS

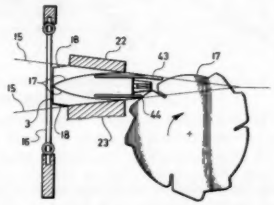
Zdenek Zabrodsky; Frantisek Augusta, both of Usti nad Orlici; Zdenek Kramenic, Chocen, and Oldrich Chronek, Brno, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

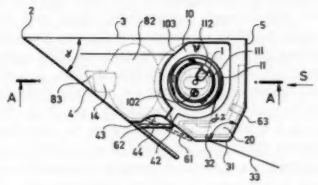
Filed June 4, 1973, Ser. No. 365,998

Claims priority, application Czechoslovakia, June 12, 1972, 4057-72

Int. Cl. D03d *47/26*

U.S. Cl. 139—12 **10 Claims**





1. In a weft inserter for travelling-wave shedding looms, having an inserter body with a leading point, a recess adapted to receive a rotary bobbin, a roller co-operating with a driving roller on a chain conveyor and with a recess for a carrier on said chain conveyor, and a weft outlet brake, the improvement which comprises a planar base wall of the weft inserter including an angle (α) not exceeding 45° with a planar front wall thereof, said front wall merging via an arcuate recess into a wall merging in turn into a rear wall of said inserter, the rear wall forming a right angle with said base wall, in the middle of said rear wall there being provided a notch for said thread outlet brake and a guide for weft thread, said notch extending through said wall towards a slot connecting said arcuate recess with said recess for the rotary bobbin and directed towards the rotational axis of said bobbin rotatably supported on a projection in the bottom of said recess, said weft inserter, when viewed from said point, being widened by its convex surfaces merging into a top guide face and into a bottom guide face symmetrical with the latter along a middle plane of the inserter, said guide faces being provided, along said base wall, with an upper relieving surface and a lower relieving surface symmetrical with the latter along said middle plane, while the region where said front wall ceases and merges into said arcuate recess, said front wall is continued, on the one hand, as an upper thread separating spring overlapping said slot and, on the other hand, as a lower thread separating spring bent to lie parallel with said base wall said roller being arranged in the space between said point and said bobbin.

3,848,642
SHED FORMING DEVICE

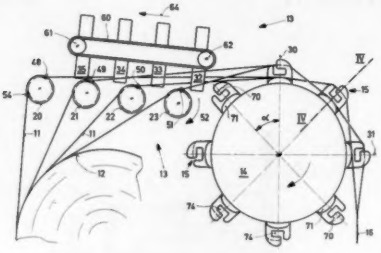
Alois Steiner, Rieden/SG, Switzerland, assignor to Ruti Machinery Works Ltd., formerly Casper Honegger, Ruti, Switzerland

Filed Apr. 4, 1973, Ser. No. 347,712

Claims priority, application Switzerland, Apr. 14, 1972, 5654/72

Int. Cl. D03c *13/00*

U.S. Cl. 139—28 **9 Claims**



1. Device for producing cloth weaves on a loom having a plurality of sheds following each other in the longitudinal direction of the warp threads, wherein there are provided rows, extending transversely of the warp threads, of shedding elements alternatingly determining upper and lower sheds, which said shedding elements travel along the warp threads, so that they retain the warp threads on their upper or lower shed position over a predetermined zone, a control means arranged before the said zone for laterally deflecting each of the warp threads in accordance with a program, thereby associating each warp thread with one of the shedding elements determining the upper or lower shed, wherein said control means comprises at least one rotatable control roller, the axis of which is arranged to extend perpendicular to the warp threads and which has a plurality of warp thread guide grooves which extend, separate from each other and continuously, in juxtaposition on the generated surface of the control roller, about the latter, and extend to and fro obliquely with reference to the axis of the control roller by a predetermined amount which, according to said program, is preferably equal to the spacing of adjacent upper and lower shed elements, the locations which are outermost in the axial direction of the said grooves being control locations for controlling the warp threads.

3,848,643
READING MECHANISM OF A DOBBY

Walter Wicker, Oberrieden, Switzerland, assignor to Staubli Ltd., Horgen-Zurich, Switzerland

Continuation-in-part of Ser. No. 232,859, March 8, 1972, abandoned. This application Feb. 20, 1973, Ser. No. 334,156

Claims priority, application Switzerland, Mar. 10, 1971, 3494/71

Int. Cl. D03c *1/22, 1/24*

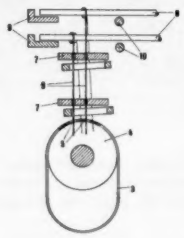
U.S. Cl. 139—68 **5 Claims**

1. In a reading mechanism of a dobby having a patterned perforated, moving pattern card and reading needles which read said perforations and control a shed-forming mechanism, the improvement comprising:

a plurality of horizontally aligned, axially and vertically movable push needle means, said push needle means being vertically movable between first and second positions, said push needle means, when in said first position, being positioned to effect an operation of said shed-forming mechanism;

a plurality of vertically aligned and axially movable reading needle means, one each being swingably connected to one of said push needle means, each of said reading needle means being adapted to move axially toward and away from and engage a perforation in said perforated pattern card to thereby control the vertical movement of said push needle means;

pusher means directly engaging said push needle means when said push needle means is in said first position to thereby effect an operation of said shed-forming mechanism, said pusher means by-passing said push needle means when said push needle means is in said second position;



conveyor means for supporting said pattern card for movement;

first drive means for driving said pattern card for continuous movement;

guide means for engaging and guiding said reading needle means; and

second drive means connected to said guide means to effect a positive movement of said reading needle means from a starting position simultaneously with said pattern card while engaged therewith, said second drive means including means for returning said reading needle means to a position above said starting position only when said reading needle means are disengaged from said pattern card.

3,848,644
WEAVING SHUTTLE

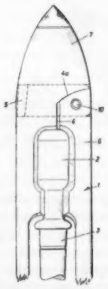
Otto Meyering, Sudlohn, and Hubert Heinrich Langenhoff, Borken-Rhedebrugge, both of Germany, assignors to Gebr. Schmeing, Borken-Weseke, Germany

Filed Aug. 27, 1973, Ser. No. 391,550

Claims priority, application Germany, Sept. 12, 1972, 335445; Mar. 5, 1973, 2310874; Apr. 7, 1973, 2317508

Int. Cl. D03j *5/16*

U.S. Cl. 139—207 **8 Claims**



1. An improved weaving shuttle for use with a weft bobbin, said weaving shuttle including:

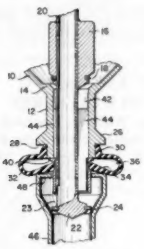
a. an elongated head portion having a transverse bore;
b. a pair of side wall portions extending longitudinally from said head portion;
c. means providing for the separation of said side wall portions along a surface crossed by said bore adjacent said head portion to mount the weft bobbin therebetween;
d. support means disposed at an angle to the longitudinal axis of said shuttle for resiliently drawing said side wall portions together to secure the weft bobbin between said side wall portions, said support means comprising:
i. an elongated plate-shaped tension element formed from an elastic material and having a longitudinal axis and a transverse axis, said element being receivable in said transverse bore, with said axes lying in a common plane which follows the longitudinal axis of said shuttle to extend across the surface of separation;
ii. an elongated abutment at one longitudinal end of said plate-shaped tension element, said transverse bore having a configuration corresponding to said tension element whereby said tension element may be placed under tension longitudinally of said transverse bore; and,
iii. means acting at the other end of said tension element for securing said tension element under a desired degree of tension longitudinally of said transverse bore.

3,848,645

CONTAINER FILLING APPARATUS

Henry H. Franz, H. H. Franz Co., 3201 Falls Cliff Rd., Baltimore, Md. 21211

Filed Aug. 6, 1973, Ser. No. 385,728
Int. Cl. B65b *3/18*; **B67c** *3/30*
U.S. Cl. 141—117 **6 Claims**



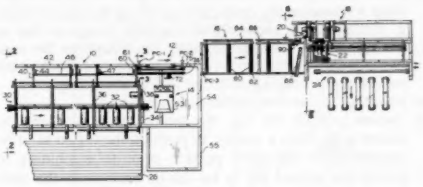
1. Apparatus for filling a container with liquid from a reservoir having a depending nozzle comprising a valve seat formed on said nozzle, a valve member having a sealing ring engaging said seat to control the flow of liquid from the reservoir through said nozzle, a vent tube carried by said valve member and arranged to extend above the liquid level in the reservoir, said vent tube extending through said nozzle and terminating in a projection, said vent tube having an opening formed therein adjacent said projection, a bellows-like member mounted on the lower end of said nozzle and depending therefrom, an annular nipple-like member carried by said bellows and arranged to engage said projection to close the opening in said vent tube, said bellows engaged by a container for initially compressing said bellows toward said nozzle to raise said nipple-like member and open said vent tube to deliver any fluid therein to said container, said nipple-like member upon the continued compressing of said bellows engaging means on said vent tube to elevate said vent tube and valve member for delivering liquid to said container through said nozzle.

3,848,646

METHOD AND APPARATUS FOR CUTTING LUMBER TO RANDOM OR SPECIFIED CLEAR LENGTHS

Thomas R. Miles, Portland, Oreg., assignor to Edward Hines Lumber Co., Hines, Oreg.

Filed Dec. 30, 1971, Ser. No. 214,011
Int. Cl. B27b *27/00*
U.S. Cl. 144—3 N **29 Claims**



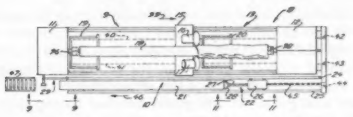
1. Apparatus for clear-cutting lumber to random and specified lengths comprising in combination:
a defect-cutting station including defect-cutting means, means for driving a piece of lumber endwise across the cutting plane of said cutting means, means for sensing a defect in said piece at said cutting means, and means for actuating said cutting means to remove the sensed defect in response to said defect-sensing to provide a random clear length of lumber,
means for transferring said random clear length from said defect-cutting station to a cut-to-length station,
said cut-to-length station including length-cutting means, means for sensing the longest specified length in a given clear random-length piece, and means responsive to a specified-length sensing for positioning said clear random length with respect to said length-cutting means so as to enable said length-cutting means to cut said random length to the longest specified length sensed, and means operable to actuate said length-cutting means in response to the positioning of said random length.

3,848,647

APPARATUS FOR MACHINING LOGS

Charles Raymond Fell, P.O. Box 218, Hudson Hope, B. C., Canada

Filed Dec. 11, 1972, Ser. No. 313,942
Int. Cl. B27c *9/04*
U.S. Cl. 144—3 R **24 Claims**



1. Apparatus for machining a log having a longitudinal axis, the apparatus having a lathe portion, a grooving portion and a handling means, wherein the lathe portion includes:
a. a headstock and a tailstock, a bed extending between the headstock and the tailstock, the headstock and tailstock each having a dog for engaging the log for rotating the log about the longitudinal axis thereof,
b. a chipper carriage mounted on the bed so as to be traversed along the bed, the carriage having a cutter for turning the log as the carriage is traversed along the bed to produce a turned log,

c. a chipper carriage feed mechanism coupled to the chipper carriage to traverse the chipper carriage along the bed,

wherein the grooving portion includes:

d. a slide trough for carrying a turned log, the slide trough being adjacent and parallel to the bed,

e. a feed carriage mounted on the slide trough for traversing along the slide trough, the feed carriage having a seat to engage an end of the turned log for pushing the log,

f. a feed carriage feed mechanism coupled to the feed carriage to traverse the feed carriage along the slide trough,

g. cutting means aligned with the slide trough so that as the turned log is traversed along the trough by the feed carriage the cutting means cuts a groove and a slot in the turned log producing a slotted and grooved log,

and wherein the handling means includes:

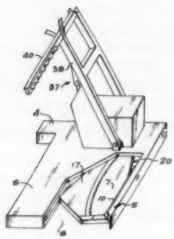
h. means to hold the log, the means being adaptable to accept a log from a supply, to position the log so as to be acceptable to the lathe portion prior to machining to permit the turned log to be moved easily into the slide trough, and to be moved clear of the log to permit machining of the log.

3,848,648

TREE FELLING APPARATUS

Michael Dika, and Jerry Felix Dika, both of P.O. Box 117, Rycroft, Alberta, Canada

Filed Apr. 6, 1973, Ser. No. 348,742
Int. Cl. A01q *23/08*
U.S. Cl. 144—34 A **7 Claims**



1. A tree feller comprising:

a frame having a base and an anvil extending forwardly therefrom;

a cutting assembly comprising a guide bar, pivotally mounted at its inner end on the base, having an endless, driven saw chain mounted on its peripheral portion, said cutting assembly further comprising a guard member, associated with the guide bar, for protecting the upper and lower side surfaces of the return portion of the saw chain, said guide bar and guard member having substantially parallel top and bottom surfaces;

means for rotating the saw chain about the guide bar;

means for advancing the cutting assembly from an open position to a closed position adjacent the anvil, whereby a tree located between them may be cut by the saw chain;

a pusher assembly associated with the frame and adapted to contact a tree being cut at a point spaced above the guide bar;

means for pressing the upper portion of the pusher assembly against the tree to control the direction of its fall;

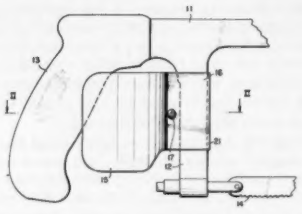
said saw chain being of sufficient size to make a cut having a kerf substantially equal to or greater than the thickness of the guide bar and associated guard plate, whereby the tree may be cut without any substantial wedging action.

3,848,649

SAFETY DEVICE FOR HACKSAW

Varney V. Wanless, Amity, Oreg., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Aug. 23, 1973, Ser. No. 390,939
Int. Cl. B27b *21/02*
U.S. Cl. 145—35 R **1 Claim**



1. A sheet metal shield that may be readily clamped to the frame of a hacksaw for the purpose of protecting a hand of the user that is grasping the handle of the hacksaw, said shield being shaped and fitted with attachment means so as to locate the shield in a position that does not interfere with the replacement of a blade on the hacksaw,

said shield formed at one end in a U-shaped clamp section of a size to fit about a frame member of the hacksaw that is generally oriented perpendicular to the axis of the hacksaw blade, with threaded fastening means fitted to the said end of the shield for clamping the U-shaped clamp section about the same frame member,

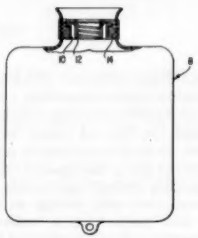
said shield shaped in a curved form so as to rest, in the attached state in a location extending from the attached hacksaw frame member, to a location about one side of the hacksaw handle and separated from the hacksaw handle by a space sufficient to permit positioning of the hand of the user about the hacksaw handle and between the hacksaw handle and the shield in said space.

3,848,650

BOTTLE CLOSURES

Philip Wilson-Haffenden, Walmer, England, assignor to Haffenden-Richborough Limited, Sandwich, Kent, England

Filed Apr. 28, 1972, Ser. No. 248,383
Int. Cl. B65d *33/16*
U.S. Cl. 150—8 **7 Claims**



1. A hot-water bottle formed of flexible, water-retaining material and having a neck portion closed by a molded plug, said plug including an orifice adapted to receive a threaded stopper, a plastic shell axially slidably insertable in said plug and having internal threads for engaging said threaded stopper, and wherein said plug includes an integrally molded shoulder partially closing said orifice at the outer end thereof

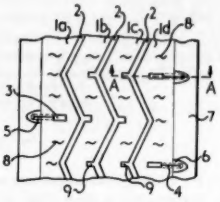
against which said plastic shell is adapted to abut when fully inserted into said plug and which provides a washer for said stopper.

3,848,651

TIRE TREAD HAVING DRAINAGE CHAMBERS

Tom French, Sutton Coldfield, England, assignor to Dunlop Limited

Filed Sept. 12, 1972, Ser. No. 288,436
Claims priority, application Germany, Sept. 15, 1971, 42869
Int. Cl. B60c 11/06
U.S. Cl. 152—209 R 13 Claims



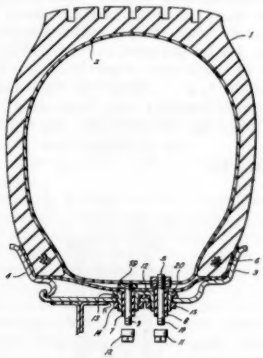
1. A tire comprising a tread portion having an axially outer circumferential tread rib, a plurality of circumferentially spaced apart wide drainage chambers provided in said circumferential rib, narrow axial slots extendng from at least some of the chambers to the axially outer side of the tire, and wide axial drainage channels connected to the chambers and spaced radially inwards from the ground-contacting surface of the rib at the base of the slots.

3,848,652

INNER TUBE SEALING MEANS

George W. Hughes, 2601 Mills, Houston, Tex. 77026

Filed Oct. 11, 1973, Ser. No. 405,472
Int. Cl. B60c 29/00
U.S. Cl. 152—427 5 Claims



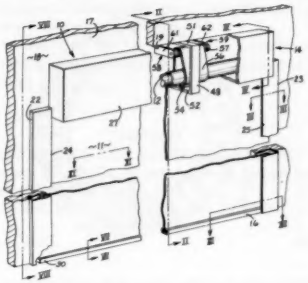
1. In a means for sealing an inner tube in a tire casing mounted on a wheel rim, an inner tube having a valve stem, a flexible member mounted between said inner tube and rim, valve stem extending through said flexible member and terminating between said member and said inner tube, means for maintaining said valve stems in position of the rim.

3,848,653

FLEXIBLE CLOSURE PANEL AND MEANS FOR SUPPORTING SAME

Wilbur R. Youngs, Findlay, Ohio, assignor to Overhead Door Corporation, Dallas, Tex.

Filed Feb. 12, 1973, Ser. No. 331,615
Int. Cl. E06b 9/08
U.S. Cl. 160—120 21 Claims



1. In a closure structure including flexible closure panel means having upper and lower edges, comprising:

elongated, horizontal shaft means, the upper edge of said panel means being secured to said shaft means so that rotation of said shaft means in one rotational direction will cause said panel means to be rolled upon said shaft means;

support means located beneath said shaft means and adapted to support said shaft means and the panel means rolled thereon in a substantially horizontal position;

roll means rotatably supported directly above, parallel with and spaced from said shaft means;

shoe means secured to and along said lower edge of said panel means, said shoe means and the lower portion of said panel means being heavier than said shaft means;

plural spaced band means having intermediate portions thereof draped over said roll means, each band means having its upper end attached to said shaft means and its lower end attached to said shoe means, said band means being rolled upon said shaft means in said one rotational direction and the tension on said band means being such that said shaft means is raised off of said support means when said shoe means is raised; and

means for selectively rotating said shaft means.

3,848,654

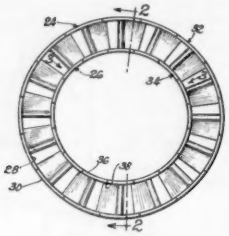
PRECISION CASTING WITH VARIABLE ANGLED VANES

James H. Boyle, Muskegon, and John E. Ingalls, Pentwater, both of Mich., assignors to Howmet Corporation, Greenwich, Conn.

Filed Feb. 10, 1972, Ser. No. 225,222
Int. Cl. B22c 9/02
U.S. Cl. 164—34 3 Claims

1. In the method of producing ring structures formed of a ring member with a plurality of vanes of the same design extending radially in circumferentially spaced apart relation from the ring member, with some of the vanes extending at an angle of rotation with reference to their radial axes normal to the ring axis which differs from others of the vanes, in which an integral pattern of the ring member and radially extending vanes is formed of heat disposable material for use in producing an integral casting by precision casting technique, the steps of providing separate heat disposable patterns of the vanes with locating projections extending from the ends thereof, providing separate ring forming segments of heat disposable material having sockets shaped to correspond with

the locating projections on the ends of the vanes for receiving the locating projections therein in fitting relation for assembly of the vane patterns with the segments and in which the segments are formed with end walls shaped to interfit one with another for assembly into a composite ring structure, in which in order to assemble the patterns with vanes extending at an angle of rotation with reference to their radial axes which differ from others of the vanes in the assembled ring structure,



each of the vanes are the same and each of the segments are the same except for the sockets which form one segment to another different in their angle of rotation with reference to the radial axis, assembling said vanes with the segments having the sockets differing in angles of rotation corresponding to the desired differences in angle of rotation of the assembled vanes in the ring structure, and joining the ring segments with the assembled vanes into the ring structure.

3,848,655

METHOD OF MAKING A STEEL INGOT

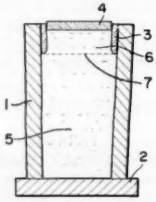
Yasumasa Sato, Imaichi; Shigeru Matsuyama, Utsunomiya, and Masaaki Kobayashi, Imaichi, all of Japan, assignors to Aikoh Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1972, Ser. No. 316,874

Claims priority, application Japan, Dec. 27, 1971, 46-105469

Int. Cl. B22c *1/22*

U.S. Cl. 164—43 **10 Claims**



1. A method of making a steel ingot which comprises pouring at least 3 tons of molten steel into a steel ingot forming mold, said mold being provided with an insulating material for maintaining the side portion of the molten steel in a hot condition at the upper portion of the mold, with said molten steel having a carbon content of not more than 0.7 percent, with the amount of molten steel at the hot upper portion of the mold being at least 10 percent by weight of the steel ingot; covering the top surface of the molten steel, and thus keeping it warm, with a plate-like molded material having a bulk specific gravity of 0.2 to 0.7 and a thickness of at least 10 mm which comprises 30 to 88 percent by weight of a refractory material, 5 to 45 percent by weight of a fibrous substance and 2 to 20 percent by weight of a binder; and casting a steel ingot in said mold.

3,848,656

PROCESS FOR COOLING AND SUPPORTING A CONTINUOUSLY CAST METAL BAR

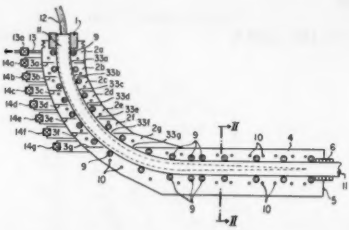
Jean-Luc Charles Meylan, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge/Geneva, Germany

Filed June 8, 1972, Ser. No. 260,733

Claims priority, application Switzerland, June 9, 1971, 8423/71

Int. Cl. B22d *11/12*

U.S. Cl. 164—89 **7 Claims**



1. A process for cooling and supporting a continuously cast metal strand, particularly a steel slab, in which the metal strand is formed in a cooled mould and extracted from the mould by roller trains, the metal strand being cooled during extraction until it has completely hardened, the improvement comprising subjecting the surface of the metal strand, in the region of solidification of the metal strand, along its path of extraction, to the action of a gaseous medium having about the same pressure as the ferrostatic internal pressure of the metal strand and, at the same time, cooling said metal strand by spraying liquid on its surface, the metal strand leaving the mould being guided first along an inclined and curved path and then along a substantially horizontal path, the surface of the metal strand being subjected to the pressure of the gaseous medium increasing by steps along the inclined path, the value of the pressure in each step being substantially constant and corresponding to the medium value of the ferrostatic internal pressure of the portion of the metal strand traversing said step.

3,848,657

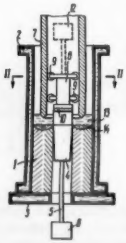
APPARATUS FOR ELECTROSLAG MELTING OF HOLLOW INGOTS

Vladimir Alexandrovich Tetjuev, ulitsa Uralskaya, 113, kv. 79, Perm, Boris Izrailevich Medovar, ulitsa Turgeneva, 33, kv. 6; Leonty Vasilievich Chekotilo, bulvar Lesi Ukrainki, 2, kv. 8; Valery Georgievich Popov, ulitsa Scherbakova, 49a, kv. 10, all of Kiev; Pavel Ivanovich Tjurikov, ulitsa Ezhena Potie, 9, kv. 7, Perm; Ivan Egorovich Kosmatenko, ulitsa Tekhnicheskaya, 15, kv., Perm, all of U.S.S.R.

Filed Dec. 29, 1972, Ser. No. 319,794

Int. Cl. B22d *27/02*

U.S. Cl. 164—252 **3 Claims**



1. An apparatus for electroslag melting of hollow ingots, said apparatus comprising: a cooled crystallizer; a bottom

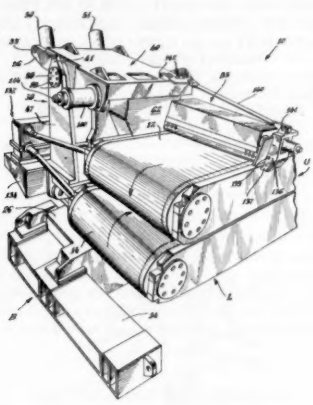
plate for said cooled crystallizer; a mandrel for forming a cavity in an ingot, said mandrel being introduced into said crystallizer; a drive for moving said mandrel in the vertical direction; at least one consumable electrode mounted in an electrode holder and adapted for melting an ingot in said cooled crystallizer; and an extension assembly for said mandrel, said extension assembly being mechanically fixed-coupled with said mandrel and electrically insulated therefrom and having rollers for centering said mandrel, mandrel-faced lateral sides of said consumable electrode serving as guides for each of said rollers.

3,848,658

CARRIAGE ORIENTATION AND LIFT SYSTEM FOR A TWIN BELT CONTINUOUS METAL CASTING MACHINE

Robert William Hazelett, Winooski; John Frederick Barry Wood, Burlington, and Robert J. Carmichael, Colchester, all of Vt., assignors to Hazelett-Strip-Casting Corporation, Malletts Bay, Winooski, Vt.

Filed Mar. 16, 1973, Ser. No. 342,096
Int. Cl. B22d *11/06*
U.S. Cl. 164—278 **15 Claims**



1. A carriage orientation and lift system for a twin-belt continuous metal casting machine comprising:

a machine frame including a chassis with a back frame extending upwardly therefrom,

a lower belt carriage extending outboard from this chassis in rigid cantilevered relationship adapted to have a lower casting belt revolved around it,

a fulcrum pivot on said back frame above the level of said lower carriage,

a lift arm pivotally attached to said back frame by said fulcrum pivot, said lift arm having a rear portion extending behind said back frame and a front portion extending in front of said back frame,

lift means connected to the rear portion of said lift arm and to the frame for pulling downwardly on the rear portion of said lift arm to swing up the front portion thereof,

an upper carriage connected by a pivot assembly to the front portion of said lift arm, said upper carriage being positioned above said lower carriage and being adapted to have an upper casting belt revolved around it in parallel relationship with said lower belt,

a convex circularly curved cylindrical segment positioned on said back frame at a lower level than said fulcrum pivot,

roller means mounted on said upper carriage at a lower level than said pivot assembly in rolling engagement with said curved cylindrical segment,

the axis of said curved cylindrical segment being parallel with the axis of said pivot assembly and also parallel with the axis of said fulcrum pivot,

the distance from said fulcrum pivot to the axis of said curved cylindrical segment being equal to the distance from the axis of said pivot assembly to the axis of said roller means, and

the effective radius of curvature of said curved cylindrical segment plus the radius of said roller means being equal to the distance between the axis of said fulcrum pivot and the axis of said pivot assembly,

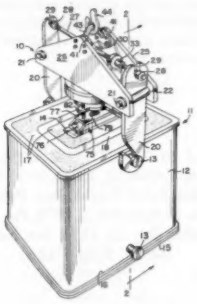
thereby to maintain the upper carriage parallel with the lower carriage as the upper carriage is raised and lowered by said lift arm.

3,848,659

APPARATUS FOR HANDLING MOLDS

Edward Keagy, Naperville, Ill., assignor to Kaiser Industries Corporation, Oakland, Calif.

Filed Nov. 3, 1972, Ser. No. 303,376
Int. Cl. B22d *29/04*
U.S. Cl. 164—405 **10 Claims**



1. A device for separating an arbor and a cast iron ingot mold from a pouring assembly including a flask comprising a portable fixture including vertical jack means operatively mounted on said fixture, a motor on the fixture operatively connected with said jack means to cause the jack means to operate in a downward direction, a cross-beam mounted adjacent the lower end of the vertical jack means, and means to rotate said cross-beam between two positions at substantially ninety degrees from each other whereby to engage an arbor in one position and to engage a cast iron ingot mold in the other position, said jack means and cross-beam by the downward movement thereof causing said arbor to separate from the flask in one position of the cross-beam and causing said ingot mold to separate from said flask in the other position of the cross-beam.

3,848,660

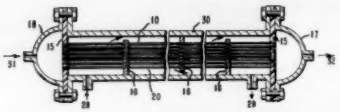
PLASTIC HEAT EXCHANGE APPARATUS AND A METHOD FOR MAKING

Thomas A. Reilly, Reading, Pa.; Charles F. Reitz, and Robert D. Smith, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 64,221, Aug. 17, 1970, Pat. No. 3,718,181.
This application Sept. 22, 1972, Ser. No. 291,182
Int. Cl. F28f *7/00*
U.S. Cl. 165—1 **4 Claims**

1. A method of transferring heat between two fluid masses comprising: passing a first fluid mass through the interior and directly into contact with the inner surface of a plurality of hollow filaments made from a plastic composition containing

5 to 45 percent by weight of filler particles having a thermal conductivity substantially greater than the thermal conductivity of the plastic, substantially all of said filler particles having a diameter greater than 2.0 microns and the ratio of the diameter of said filler particles to the wall thickness of said filaments is 0.001 to 0.1, said filler particles having a distribution in said plastic composition which is homogeneous enough so



that said filaments have a tensile strength greater than 1,000 psi and an elongation to failure of greater than 25 percent at room temperature and heterogeneous enough so that said filaments have a thermal conductivity greater than twice the thermal conductivity of the plastic; and directly contacting substantially the entire outer surface of said hollow filaments with a second fluid mass having an overall temperature difference from said first fluid mass.

3,848,661

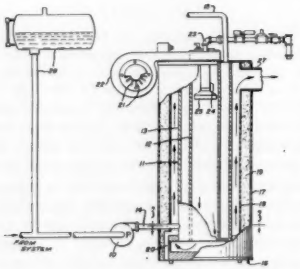
THERMAL FLUID HEATER APPARATUS

Lewis J. Palm, and Ronald B. Palm, both of Pulaski, N.Y., assignors to Fulton Boiler Works, Inc., Pulaski, N.Y.

Division of Ser. No. 77,820, Oct. 5, 1970, Pat. No. 3,747,670. This application July 23, 1973, Ser. No. 381,372

Int. Cl. F28d *7/10*

U.S. Cl. 165—155 **2 Claims**



1. An apparatus for heating a thermal fluid having a boiling point higher than water and for circulating the heated thermal fluid within a closed system in order to exchange the heat of that fluid comprising: means including an interior cylindrical shell and a concentric exterior cylindrical shell coextension with and radially spaced therefrom to define a substantially unobstructed elongated annular chamber for continuous unidirectional throughflow of thermal fluid during circulation thereof through the closed system; means for heating the shells to effect heat exchange with the thermal fluid during throughflow thereof in said chamber and including an insulated outer jacket spaced radially from said exterior shell, air inlet deflecting means and a source of combustible material positioned within said interior shell for producing hot combustion products flowing in one axial direction through the inside of the interior shell in wall contact therewith and then flowing in the opposite axial direction between the outside of the exterior shell and the jacket in wall contact therewith; means for producing a bodily flow of said thermal fluid within said annular chamber continuously swirling about the central axis of said chamber in a helical path of predetermined width and characterized by rotary and axial flow components cooperatively determining a flow that continuously fills and sweeps the entire annular chamber by introducing adjacent one end of the chamber a stream of said liquid along a direction that is tangent to the chamber periphery including horizontal inlet means at one end of said chamber directed tangentially to said helical flow path and outlet means at the opposite end of said annular chamber; and said apparatus being characterized in that the radial distance between said interior and exterior shells is in the range from about 1 inch to about 10 inches, the shells further having a length of about twice the diameter of the exterior shell and the inlet having a diameter in the range from about 1½ inch to about 3 inches to produce a minimum flow rate in said chamber of 1 foot per second for preventing scorching of said thermal fluid.

3,848,662

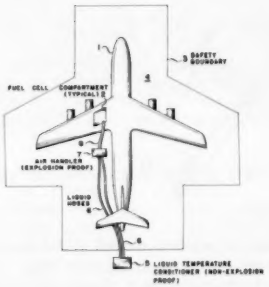
METHOD AND APPARATUS FOR SUPPLYING A TEMPERATURE CONDITIONED AIRFLOW TO AN OPEN COMPARTMENT IN AN EXPLOSION SUSTAINING AMBIENT SURROUNDING

Roy L. Kilgore, Marietta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Feb. 3, 1972, Ser. No. 223,282

Int. Cl. F24h *3/06*

U.S. Cl. 165—1 **5 Claims**



1. A method of supplying temperature conditioned, ambient air to the interior of a compartment open to the ambient and containing explosion sustaining vapors at a compartment temperature in the range of from approximate the ambient temperature up to approximately 50°F. above the ambient temperature, said open compartment further producing an explosion sustaining zone ambient to the compartment, said method comprising the steps of:

temperature conditioning a liquid at a location exterior to the explosion sustaining zone;

circulating said temperature conditioned liquid to an explosion proof heat exchange means located within the explosion sustaining zone, and returning said liquid out of the explosion sustaining zone for recycling of the temperature conditioning;

blowing explosion sustaining zone air into contact with the heat exchange means and thus heat exchange relationship relative to the temperature conditioned liquid whereby said air becomes temperature conditioned; and

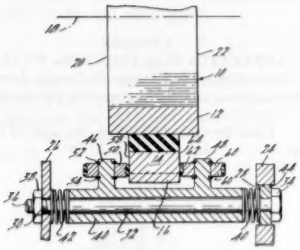
supplying said temperature conditioned ambient air to the interior of the compartment.

3,848,663

ROTARY REGENERATOR FOR A GAS TURBINE ENGINE WITH RESILIENT MOUNTS FOR POSITIONING THE REGENERATOR

V. Durga Nageswar Rao, Woodhaven, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 19, 1973, Ser. No. 417,441
Int. Cl. F28d 19/00
U.S. Cl. 165—8 12 Claims



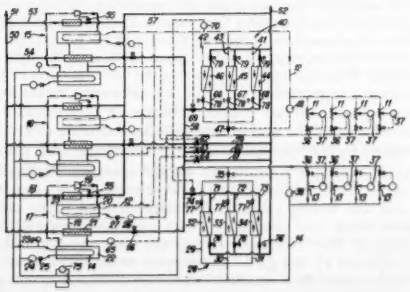
1. A regenerator assembly for a gas turbine engine comprising a rotary regenerator core mounted within a gas turbine engine, said assembly comprising a ceramic matrix adapted to conduct a counterflow of hot and cool gases under differential pressures, a matrix rim surrounding the regenerator matrix, a ring gear surrounding the rim, a means for yieldably mounting the ring gear concentrically around the rim, an adjustable member situated adjacent the ring gear and mounted on portions of said housing for shifting movement in a direction generally parallel to the axis of rotation of said regenerator matrix, bearing means carried by the adjustable member for positioning said rim relative to said adjustable member, means for yieldably maintaining said adjustable member in its adjusted position whereby the axial position of said regenerator matrix with respect to the engine housing and the direction of the axis of rotation of said matrix may be controlled.

3,848,664

HEATING/COOLING APPARATUS

Edward James Perry, Ickenham, and Paul Moumouloff, London, both of England, assignors to Kins Developments Limited, London, England

Filed June 23, 1972, Ser. No. 265,454
Claims priority, application Great Britain, June 23, 1971, 29495/71
Int. Cl. F24f 3/00
U.S. Cl. 165—22 13 Claims



1. Heating and cooling apparatus including a heating device, a heating circuit for recirculating heated fluid to the heating device, a cooling device, a cooling circuit for recirculating cooled fluid to the cooling device, the flow path in the cooling circuit being separate from the flow path in the heating circuit, refrigeration means for cooling the cooled fluid and heating the heated fluid, first heat exchange means selectively operable for removing unwanted heat from the heating circuit when not required by the heating device, and second heat exchange means selectively operable for adding heat to the fluid in the cooling circuit when insufficient heat is added at the cooling device.

ERRATUM

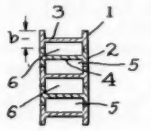
For Class 165—34 see:
Patent No. 3,848,654

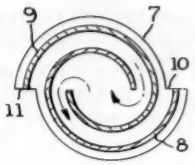
3,848,665

DAMPER SLIDE FOR HOT BLAST SLIDE DAMPERS

Johannes Uerlichs, Woffelsbach; Rudolf Muller, Merzenich, and Wilhelm Kuckertz, Konzendorf, all of Germany, assignors to Hermann Rappold & Co. GmbH, Duren, Germany

Filed May 9, 1972, Ser. No. 251,709
Claims priority, application Germany, May 17, 1971, 2124303
Int. Cl. F16k 49/00
U.S. Cl. 165—168 2 Claims





1. A slide for use in a hot blast slide damper having a casing, said slide comprising:

a pair of channel members, each having an I-shape cross-section with opposite flanges joined by a web;

said pair of channel members being spirally interwound with the edges of the flanges of one of said members sealingly connected to the edges of the flanges of the other of said members;

said spirally interwound members forming a flat disc;

said connected and spirally interwound members forming therebetween a pair of spaced convoluted cooling channels, said channels being separated by said webs of said members;

said channels being connected at the center of said flat disc;

a first of said channels, at the periphery of said disc, having an inlet connection for communication with a source of cooling fluid;

a second of said channels, at the periphery of said disc, having an outlet connection for discharging said cooling fluid;

whereby cooling fluid flows into said first channel from said inlet connection, through said first channel to said center of said disc and into said second channel, and through said second channel to said outlet connection; and

a core member positioned at said center of said disc, said core member having deflecting means forming continuations of said webs of said members.

3,848,666

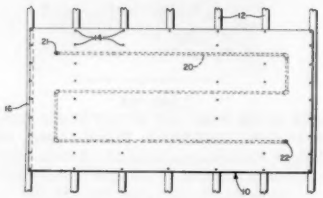
FOAMED METAL BODIES

Alex R. Valdo, Phoenix, Ariz., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. Nos. 91,211, Nov. 19, 1970, abandoned, and Ser. No. 91,212, Nov. 19, 1970, Pat. No. 3,735,552 abandoned. This application Feb. 26, 1973, Ser. No. 335,680

Int. Cl. F28f *3/12*

U.S. Cl. 165—168 **4 Claims**



1. A rectangular structural panel of foamed aluminum having discrete cells therein, having a density less than about 50 pounds per cubic foot and having embedded therein a copper-base conduit for a heating liquid, the conduit having an inlet and an outlet end, both of said ends projecting out through one face of the panel.

ERRATUM

For Class 165—252 see:
Patent No. 3,848,657

3,848,667

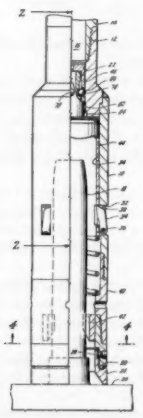
SHEARED PIPE CUTTER

John E. Clark, Jr., Houma, La., assignor to A-Z International Tool Company, Houston, Tex.

Filed Nov. 2, 1973, Ser. No. 412,114

Int. Cl. E21b *29/00*

U.S. Cl. 166—55.6 **9 Claims**



1. A pipe cutter for cutting sheared well drill pipe comprising

a tubular mandrel having means at its upper end for connecting with a pipe string,

a plurality of cutters pivotally mounted in windows defined by said mandrel,

a piston slidably mounted within said mandrel and adapted to engage said cutters to cam said cutters to a cutting position,

said piston having means for restricting flow of fluids through said piston during cutting by said cutters and a bypass whereby movement of said piston to a completed cutting position opens said bypass around said flow restricting means to provide a change in pressure of the fluid in the mandrel above said piston signaling completion of said cut.

3,848,668

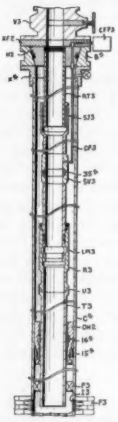
APPARATUS FOR TREATING WELLS

Phillip S. Sizer, Dallas, and Carter R. Young, Lewisville, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 22, 1971, Ser. No. 210,727

Int. Cl. E21b *23/00*

U.S. Cl. 166—72 **16 Claims**



1. Apparatus for treating a well having one or more flow conductors therein to install a surface controlled subsurface safety valve in each such flow conductor of the well for controlling flow from the well therethrough which includes: guide and support means insertable through each well flow conductor to engage the flow conductor at a point below which it is desired to part said conductor for removal of the upper portion of said conductor thereabove leaving the lower portion of the conductor in place in the well; means for parting the upper portion of each original flow conductor from the remainder thereof left in place in the well at the selected point in the flow conductor for removal of the upper portion of the flow conductor from the well while leaving the lower portion engaged with and supported by the guide support means; means including replacement flow conductor means for each separate flow conductor of the well having surface controlled safety valve means therein insertable into the well telescoped over the guide and support means into engagement with the upper end of the lower portion of the flow conductor left in place in the well and having connecting means for connecting said replacement flow conductor means with the upper end of the original flow conductor left in the well engaged with and supported by the guide and support means over which said replacement flow conductor means is telescoped, said guide and support means being removable from within the replacement flow conductor means after said replacement flow conductor means has been connected to the upper end of said

original low conductor left in place in the well for removal of said guide and support means from the well; and control means at the surface connected to each of the subsurface safety valve means and operative in response to predetermined conditions sensed in the well or at the surface for actuating each of said safety valve means to cause the same to move to closed position upon the occurrence of such predetermined sensed conditions, whereby wells may be provided with surface controlled subsurface safety valve apparatus without disturbing the flow conductors below the point of parting and removing the upper portion thereof and without disturbing the remainder of the flow conductor and well apparatus left in place in the well therebelow.

3,848,669

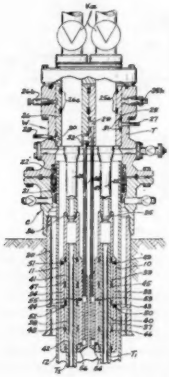
WELL CONTROL APPARATUS

Cicero C. Brown, P.O. Box 19236, Houston, Tex. 77024

Filed Nov. 29, 1972, Ser. No. 310,665

Int. Cl. E21b *43/12, 33/03*

U.S. Cl. 166—72 **30 Claims**



1. An assembly for regulating the flow of effluents through a well comprising:

a. support means releasably supporting a plurality of parallel conduits in said well;

b. sensor means connected to said support means and responsive to one or more predetermined conditions at said well to automatically release said support means; and

c. flow control means comprising valve means in each of said conduits operable upon predetermined movement of its respective conduit to regulate flow of effluents through the well, said valve means comprising a first valve connected to said conduit and a second valve adapted to be moved axially through said conduit into operative engagement with said first valve to render said first valve inoperative and said second valve operative upon said predetermined movement of its respective conduit.

3,848,670

VALVE ASSEMBLY

Charles A. Pitts, Wichita Falls, Tex., assignor to The Dow Chemical Company, Midland, Mich.

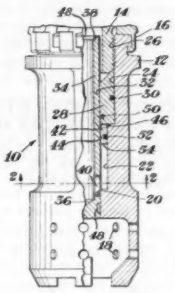
Filed June 25, 1973, Ser. No. 373,330

Int. Cl. E21b *43/12*; **F16k** *1/00*

U.S. Cl. 166—224 R **8 Claims**

1. A valve assembly adapted for use in a tubular structure, said assembly including a housing adapted to be coupled at one end to a suitable structure disposed across said tubular structure, said housing having an inner cylindrically shaped wall including an undercut part thereof intermediate the ends of the housing,

a tubular member having an upper end and a lower end and outer wall having an outwardly extending shoulder, said tubular member fitting within said housing, said outer wall of said tubular member fitting closely but slidably against the inner wall of said housing with said shoulder fitting closely but slidably against said undercut part, said housing and said tubular member each having at least one port extending therethrough, means for maintaining a



slidable sealing relationship between said housing and said tubular member between said shoulder and above said undercut part, means for applying a mechanical force through one end of said housing to move said tubular member with respect to said housing whereby said ports communicate with each other and a vacuum is produced in the space between said shoulder and an adjacent undercut part of said housing.

3,848,671

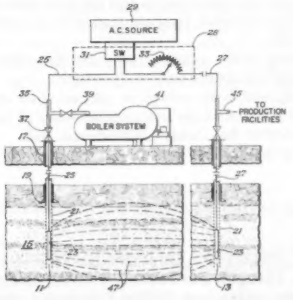
METHOD OF PRODUCING BITUMEN FROM A SUBTERRANEAN TAR SAND FORMATION

Loyd Rupert Kern, Irving, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 24, 1973, Ser. No. 409,063

Int. Cl. E21b *43/00*

U.S. Cl. 166—248 **16 Claims**



1. A method of producing bitumen from a subterranean tar sand formation containing viscous bitumen comprising the steps of:

a. drilling and completing a plurality of at least two wells extending from the surface into said tar sand formation for production of said bitumen therefrom; at least one said well being completed as an injection well and at least one said well being completed as a production well; said wells being spaced apart and arranged in a predetermined pattern;

b. pre-heating said tar sand formation and sand bitumen intermediate said wells sufficiently to render said bitumen mobile within said tar sand formation; said pre-heating being effected by passing a predetermined electrical current from one of said wells to the other of said wells for a predetermined time interval;

c. thereafter injecting a fluid that is immiscible with said bitumen through said injection well and into said tar sand formation; and

d. producing said bitumen from said production well.

3,848,672

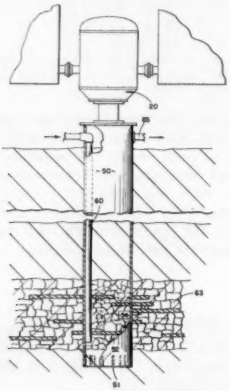
SONIC RETORTING TECHNIQUE FOR IN SITU MINING OF CARBONACEOUS MATERIAL

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed May 21, 1973, Ser. No. 361,885

Int. Cl. E21b *43/24*

U.S. Cl. 166—249 **13 Claims**



1. The method of extracting oil from an oil shale body in the earth having kerogen therein, comprising the steps of:

coupling a sonic generator to said oil shale body by means of a solid member interconnecting said generator and said body,

transmitting sonic energy from said generator through said solid member to said oil shale body,

expending said sonic energy in said oil shale body as an energy sink until conversion temperature of the kerogen is reached so that shale oil is produced, and

extracting the shale oil from the earth.

3,848,673

RECOVERY OF HYDROCARBONS

Richard L. Clampitt, and James E. Hessert, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 26, 1973, Ser. No. 335,810The portion of the term of this patent subsequent to Jan. 10, 1990, has been disclaimed.

Int. Cl. E21b *43/16*

U.S. Cl. 166—275 **27 Claims**

1. A method of treating a subterranean formation, penetrated by at least one borehole, with a fluid medium comprising an aqueous gel, which method comprises:

adding to water containing a water-thickening amount of a water-soluble cellulose ether, an amount of a water-soluble compound of a polyvalent metal wherein the metal present is capable of being reduced to a lower polyvalent valence state, said amount of metal compound being sufficient to cause gelation of said water when the valence of at least a portion of said metal therein is reduced to said lower valence state;

injecting said water containing said cellulose ether and said metal-containing compound into said borehole and into said formation; and

contacting said water in said formation with an amount of a reducing gas which is effective to reduce at least a portion of said metal to said lower valence state.

3,848,674

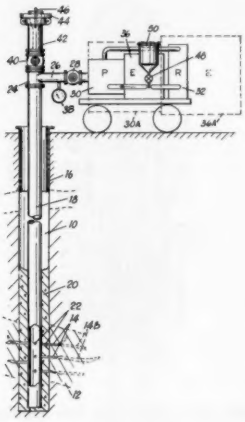
METHOD AND APPARATUS FOR FRACTURING OIL AND GAS STRATA

Archibald Irvine McColl, Kalamazoo, Mich., assignor to Alexander M. S. McColl, Kalamazoo, Mich.

Filed Oct. 18, 1973, Ser. No. 407,622

Int. Cl. E21b *43/00, 43/26*

U.S. Cl. 166—299 **12 Claims**



1. Apparatus for developing sub-stratum fracturing pressure from an adjacent portion of a well bore having a high pressure pipe extending to the top of the bore and having its lower end sealed to the bore along said stratum with pressure openings in the pipe and the seal comprising,

means for introducing fracturing liquid into the top of said pipe,

a means defining charge receiving and explosion chamber adapted to be connected to the top of said pipe in pressure transmitting relation to the interior of the pipe,

and means for exploding an explosive charge in said chamber,

said pipe and said chamber being capable of withstanding pressures of at least 2,000 p.s.i.

3,848,675

FOAM-PRODUCING APPARATUS

John L. Evans, Blackwater, near Camberley, England, assignor to Chubb Fire Security Limited, Middlesex, England

Continuation-in-part of Ser. No. 242,317, April 10, 1972, abandoned. This application Nov. 5, 1973, Ser. No. 412,639

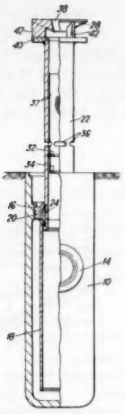
Claims priority, application Great Britain, Apr. 14, 1971, 9437/71

Int. Cl. A62c *35/44*

U.S. Cl. 169—15 **8 Claims**

1. In a fire-fighting sprinkler system, foam-producing apparatus comprising:

a foam generator having an inlet for receiving a solution of a foaming agent and a delivery end through which the foam is expelled and defining a path between the said inlet and delivery end, a jet head between the inlet and the delivery end for forming the said solution into a spray, a turbulence generator located downstream of the jet head, and air-entraining means comprising air-intake apertures and opening into the path of the said solution between the jet head and the turbulence generator for introducing air into the path of the spray;



a housing for the foam generator, the housing in use being recessed into the ground;

the foam generator being mounted for movement relative to the housing between a lower position in which it does not extend substantially above the housing and an upper position in which the delivery end and the air-intake apertures of the foam generator are above the level of the housing and to which the foam generator is automatically lifted, when the foaming agent solution is delivered to the solution-receiving inlet, by the pressure of the solution.

3,848,676

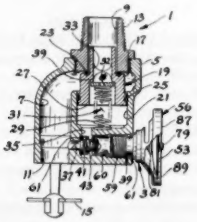
THERMALLY ACTUATED VALVE ASSEMBLY

John Doherty, Jr., Assonet, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1973, Ser. No. 428,600

Int. Cl. A62c *37/08*

U.S. Cl. 169—37 **6 Claims**



1. In a main valve assembly, such as for a fire extinguishing sprinkler, having a valve body with a main passage therethrough, one end of said main passage constituting an inlet adapted for connection to a pressurized fluid source and the other end thereof constituting an outlet adapted for the discharge of fluid, a main valve seat in said main passage between said inlet and said outlet, valve means movable between a closed position in engagement with said main valve seat blocking communication between said inlet and said outlet and an open position permitting the flow of fluid through said main passage, said main valve means having a first pressure area against which fluid pressure acts to move said valve means from its closed position to its open position and a second pressure area larger than the first pressure area against which fluid pressure acts to seat said valve means against said main valve seat so as to maintain said main valve means in its closed position against the force exerted by fluid pressure acting against said first pressure area, an auxiliary passage between said first pressure area and said second pressure area for equalizing fluid pressure applied to the first and second pressure areas, said auxiliary passage including a vent for venting fluid pressure from acting against said second pressure area; a thermally actuated pilot valve assembly for effecting opening of said main valve assembly in response to being subjected to a predetermined elevated ambient temperature, said pilot valve comprising a housing removably insertable as a unit into said valve body in said auxiliary passage between said second pressure area and said vent, a pilot valve passage in said valve housing consituting a portion of said auxiliary passage through which all fluid vented from said vent port must flow, said pilot valve passage having an inlet, an outlet and a valve seat therebetween, said pilot valve assembly further comprising a pilot valve member movable in said pilot valve housing between a closed position in which said pilot valve member is seated in said pilot valve thereby to block communication between said second pressure area in said vent so as to maintain fluid pressure acting against said second pressure area and to maintain said main valve means in its closed position and an open position for venting fluid pressure from said auxiliary passage thus reducing the fluid pressure acting against the second pressure area so as to enable fluid pressure acting against the first pressure area to open said main valve means, means for biasing said pilot valve towards its closed position, a thermostatic disk carried by said pilot valve housing, said disk being abruptly movable over center from a first curvature position to a second curvature position when subjected to said predetermined ambient temperature, means interconnecting said disk and said pilot valve member, and abutment means spaced from said disk when the latter is in its first curvature position and engageable by said disk as it moves from its first to its second curvature position thereby to permit free movement of said disk until it engages said abutment means without application of force to said pilot valve member and, upon engagement of the disk by said abutment means, to apply a force to said pilot valve member via said interconnecting means so as to move it against the force of said biasing means toward its open position.

3,848,677

SOIL CULTIVATING IMPLEMENTS AND SCREENING ELEMENTS

Ary Van der Lely, 10, Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, Rozenburg, both of Netherlands

Filed May 17, 1973, Ser. No. 361,292

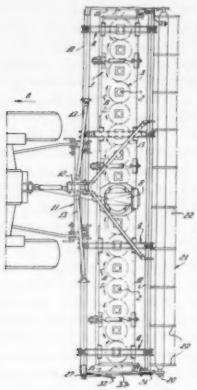
Claims priority, application Netherlands, May 24, 1972, 7206943

Int. Cl. A01b *33/06*

U.S. Cl. 172—112 **15 Claims**

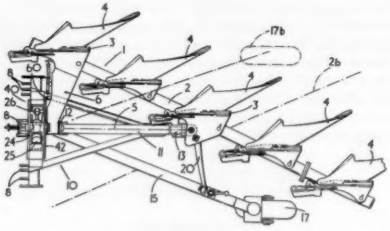
1. A soil-working cultivating implement comprising a frame and a plurality of soil-working members rotatably mounted on said frame, said soil-working members being mounted on upwardly extending shafts located in a transverse row and driving means on said implement being connected to rotate said shafts, a plate-like screening element being pivotably mounted on said frame adjacent each end of said row, said

element having a forward end pivoted to said frame and being turnable about an axis that extends substantially parallel to said shafts, a spring associated with said element and said



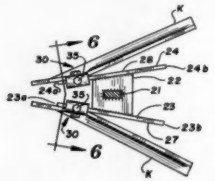
spring biasing said element to turn same towards said soil-working members, against a stop on said implement, whereby the turning movement of said screening element about said axis is limited.

3,848,678
REVERSIBLE PLOUGH OPERATING MEANS
Charles Vernon Roger Dowdeswell, Lower Radbourne Farm, Southam, Leamington Spa, Warwickshire, England
Filed Dec. 22, 1972, Ser. No. 317,820
Int. Cl. A01b *3/44, 3/46*
U.S. Cl. 172—225 **3 Claims**



1. Reversible plough mechanism for a reversible plough of the character described, in which a plough share carrying frame is pivotally mounted on support structure for turnover movement about a longitudinal axis in effecting plough reversal, the operating mechanism being carried from an upstanding support mounted on the support structure and comprising: a fluid pressure operated double acting ram which is pivotally connected about respective axes, parallel with said longitudinal axis between a forward part of the ploughshare carrying frame and the upper part of a crank member which latter is pivotally carried about a further axis parallel with and between said axes by the upstanding support whereby the ram is carried by the crank member for over center movement therewith relative to said further axis on said turnover movement of the ploughshare carrying frame, said crank member having two opposed bearing surfaces of curved form about and below said further axis; and a projection which is carried by said forward part of the ploughshare carrying frame and which, dependent on the direction of turnover movement, engages a corresponding bearing surface of the crank member when the ploughshare carrying frame is in the substantially midway over center raised position of turnover movement in order to retain the ploughshare carrying frame at said position prior to release of said engagement by reverse pivotal movement of the crank member on initial extension of the ram.

3,848,679
TOOL HOLDER
Wayne S. Tonsfeldt, Sabin, Minn. 56580
Continuation of Ser. No. 212,114, Dec. 27, 1971
Filed July 25, 1973, Ser. No. 382,522
Int. Cl. A01b *15/00, 35/22*
U.S. Cl. 172—762 **5 Claims**



1. An earth working tool mounting for attachment to a tool bar which tool bar is mounted on a vehicle for movement, such earth working tool mounting including:

a. a generally upright member having an upper end for attachment to the tool bar and having a lower end;

b. a plate member attached to the lower end of said member and positioned thereon to be in a generally horizontal attitude, the sides of said plate member being diverging outwardly from the front to the rear thereof, the front thereof being directed in the direction of movement of the vehicle;

c. a pair of generally flat mounting bars fixedly attached to said sides of said plate member, said bars each having an upper and lower surface, said upper surface being flat and horizontal and said lower surfaces consisting of upwardly and inwardly converging camming sections; and

d. means for attaching an earth working tool respectively on each of said mounting bars, said means including clamp means comprising a camming surface to engage said camming section and a generally arcuate top section to extend over said upper surface and tightening means provided through said top section for tightening against said upper surface.

3,848,680
IMPACT CLUTCH MECHANISM
John G. Legler, North Aurora, Ill., assignor to Skil Corporation, Chicago, Ill.
Filed Dec. 26, 1973, Ser. No. 427,734
Int. Cl. E21b *33/03*
U.S. Cl. 173—93.5 **11 Claims**

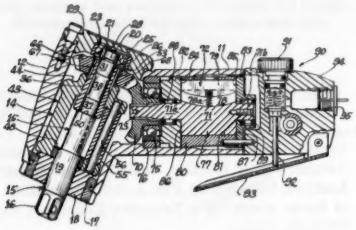
1. In an impact wrench of the type including an impact clutch mechanism and a motor for powering the same, the improvement comprising:

a. an anvil shaft carrying an anvil formation and having one of its ends configured for transmitting rotation to a member adapted to be engaged by the impact wrench;

b. an impact clutch assembly for transmitting continuous rotation to the anvil shaft until the latter resists such rotation and thereafter to impart successive impact blows to the anvil shaft;

c. connecting means for transmitting rotation from said motor to said impact clutch assembly; and

d. thrust bearing means engaged with said anvil shaft and the housing of the impact wrench for transmitting to the



latter such axial forces which are applied to the anvil shaft, said thrust bearing means being independent of said impact clutch assembly and said connection means thereby to prevent such axial forces from being transferred to said motor.

3,848,681

IMMERSION HYDROPERCUSSIVE DEVICE

Bogdan Vyacheslavovich Voitsekhovsky; Faina Fedorovna Voitsekhovskaya, and Bogdan Bogdanovich Voitsekhovsky, all of ulitsa Maltseva Kottedzh 2, Novosibirsk, U.S.S.R.

Filed Mar. 12, 1973, Ser. No. 340,035

Claims priority, application U.S.S.R., Mar. 10, 1972, 1755841

Int. Cl. E21b *11/06*

U.S. Cl. 173—125 **4 Claims**

1. An immersion hydropercussive device comprising a movable housing, a percussive mass rigidly connected to said movable housing, a source of high-pressure fluid, a hollow rod located in said movable housing, a cavity in said percussive mass, the interior of said hollow rod at one end communicating with said source of high-pressure fluid, and at the other end with said cavity in the percussive means, two stops rigidly fastened to the hollow rod, a piston mounted on said hollow rod with a provision for movement along the axis of the latter between the two said stops, a circular cavity formed between said piston and said hollow rod, ports in said hollow rod for communicating said circular cavity with the interior of the rod while accelerating said percussive mass, said piston dividing said movable housing in two cavities, a first cavity located adjacent said percussive means and a second cavity, ports formed in said piston for connecting said first and second cavities while accelerating said percussive mass, other ports in said hollow rod for communicating said second cavity with said cavity of said interior of the rod while cocking said percussive mass, another stop formed in said first cavity for interaction with the end surface of said piston upon completion of cocking said percussive mass, a liner installed co-axially in said second cavity provisioned for moving along the walls of this cavity for interaction between the end surface of the liner and said piston following the percussion of said percussive mass, and a hydroaccumulator installed between the said source of high-pressure fluid and the interior of the rod.

3,848,682

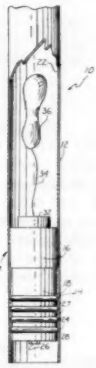
FREE-FALL CORER

John C. Payne, Long Island City, N.Y., assignor to Leslie J. Payne, Arlington, Va., a part interest

Filed Aug. 29, 1972, Ser. No. 284,567

Int. Cl. E21b *7/12*

U.S. Cl. 175—5 **6 Claims**



1. A free fall earth extracting apparatus for extruding earth from the ocean bottom comprising: a barrel having opposite open ends and being descendable to vertically penetrate the ocean bottom, an extrusion piston adapted to frictionally slide within the barrel, a container attached to the piston, an inflatable bag-like member connected at one end to the container, and means arranged within the bag-like member, thereby creating a positive buoyant force sufficient to lift the piston in the barrel, so as to effectuate extrusion of earth into the barrel, and then the apparatus including the extruded earth from the ocean bottom.

3,848,683

METHOD AND MEANS FOR DRILLING

Jan Edward Persson, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Feb. 1, 1973, Ser. No. 328,631

Claims priority, application Sweden, Feb. 10, 1972, 1588/72

Int. Cl. E21b *21/04, 1/02*

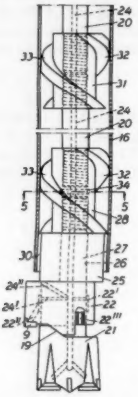
U.S. Cl. 175—65 **28 Claims**

1. A method for drilling by means of a rotatable drilling tool adapted to drill a hole in advance of trailing casing tube means which are passed by drill rod means for carrying, rotating, and supplying flushing medium to said drilling tool, the drilling particles produced during drilling being removed by said flushing medium via said casing tube means, said method comprising

a. maintaining an annular slot of predetermined and substantially constant width between the mouth of said casing tube means and said drilling tool, said slot being of a

width less than the size of drilling particles which are to be blocked from entering said casing tube means,

b. keeping centering surfaces on said drilling tool in rotary sliding engagement with the interior of said casing tube means rearwardly of and in close proximity to said slot for maintaining said drilling tool on center with respect to



said casing tube means and said slot width constant during drilling, and

c. sifting the flushing medium through said slot for preventing oversized drilling particles to be entrained into and churned in said slot and casing tube means during removal of said flushing medium and rotation of said drilling tool.

3,848,684

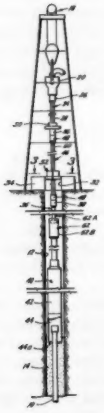
APPARATUS FOR ROTARY DRILLING

Thomas Douglas West, Houma, La., assignor to Tri-State Oil Tool Industries, Inc., Bossier Parish, La.

Filed Aug. 2, 1973, Ser. No. 385,171

Int. Cl. E21b *17/00*

U.S. Cl. 175—195 **5 Claims**



1. In a rotary drilling apparatus of the type wherein a rotary table imparts rotation to a pipe string and drill through a kelly releasably connected to the upper end of the pipe string and selectively engagable with the table for rotation therewith, the improvement comprising:

an auxiliary drive member disposed below and releasably connected to said kelly and adapted to form a part of the pipe string, and

means for selectively engaging said auxiliary drive member with said rotary table for rotation therewith.

3,848,685

MUD REMOVING SYSTEM BY MEANS OF AN EXCAVATOR AND AN APPARATUS THEREFOR

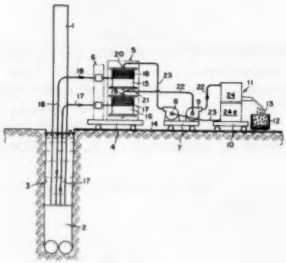
Atsushi Takagi, Yokohama; Mitsuo Miura, Tokyo; Akio Suzuki, Kashiwa; Yoshinori Kukino, Yokohama; Kiyoshi Amagai; Haruji Shimizu, both of Tokyo; Mitsutoshi Satoh, Kashiwa; Shoji Kohno, Chiba, and Mitsuo Ebine, Sakura, all of Japan, assignors to Takenaka Komuten Company, Ltd., Osaka-fu, Japan

Filed Dec. 12, 1972, Ser. No. 314,325

Claims priority, application Japan, Dec. 31, 1971, 46-1961; Mar. 18, 1972, 47-32579

Int. Cl. E21b *21/00*

U.S. Cl. 175—206 **8 Claims**



1. A spoil removal system for underground excavation comprising at least one hose, said one hose serving to remove a mud slurry entraining spoils from a zone of excavation to ground surface, means for forcing mud slurry, from the zone of excavation through the hose, a hose reel mounted on a shaft for rotational motion therewith, means for rotating the reel, a swivel pipe joint connected to one end of the shaft, one end of said hose being connected to the shaft near the swivel joint, fluid passage means through the shaft whereby fluid can pass from the hose through the shaft and through the swivel joint, traverse guiding means responsive to the amount of hose reeled in or reeled out to lay the hose properly on the reel, excavated mud treating means for the removal of spoil material from the mud and for recirculating mud slurry to the excavating zone, and pipe or hose means connected at one end to said swivel joint and at its other end to said excavated mud treating means.

3,848,686

DEVICE FOR COLLECTING DRILL DUST AND A SEALING MEMBER INTENDED FOR SAID DEVICE

Goran Jysky; Ilmar Mardla, and Bjorn Ericsson, all of NYkoping, Sweden, assignors to Ilmeg AB, Nykoping, Sweden

Filed June 14, 1973, Ser. No. 369,833

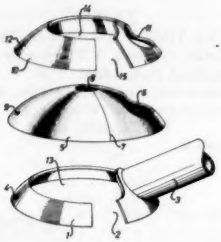
Claims priority, application Sweden, June 14, 1972, 7846/72

Int. Cl. E21b *21/00;* **E21c** *7/02*

U.S. Cl. 175—209 **9 Claims**

1. A device for collecting drill dust, especially in rock drilling, which comprises a hood provided with a connection means for a transport pipe, which hood is intended to rest with

its lower edge surface against a rock face or the like and has at its upper end a sealed-off gland for a drill bit or drill rod, wherein the hood comprises two shells (**1,10**), one of which is fitted over the other, which shells are provided at their upper ends with oppositely located apertures (**13,14**), said



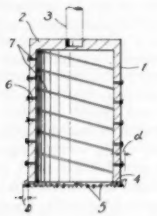
shells each being also provided with a slot (**2,15**) made in the same direction between the respective aperture (**13,14**) and outer edge, and further being arranged to hold between them an elastic sealing member (**5**) with an aperture (**8**) intended to be located in line with the aforesaid apertures.

3,848,687

HOLE SAW

Toshiei Funakubo, Odawara, Japan, assignor to Kabushiki-Kaisha Eishin, Tokyo, Japan

Filed Jan. 19, 1973, Ser. No. 325,060
Claims priority, application Japan, Feb. 8, 1972, 47-15521
Int. Cl. E21b *9/16;* **E21c** *13/00*
U.S. Cl. 175—394 **1 Claim**



1. A hole saw comprising

a hollow cylindrical body closed at one end and having a uniformly cylindrical wall projecting from said closed end which has an annular rim around its free open end,

flinders of super-hard alloy secured on said rim to project laterally outwardly beyond said wall,

said wall having an external spiral groove therein, and

means positioned in said spiral groove and carrying flinders of super-hard alloy in a spiral path around the outside of said wall and positioned to project outwardly from said wall to a less extent than the first-mentioned flinders.

3,848,688

LIQUID-REPELLING SHIELD DEVICE

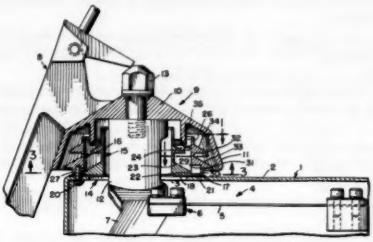
King L. Kloppenstein, Prospect Heights, Ill., assignor to Triangle Package Machinery Company, Chicago, Ill.

Filed Oct. 26, 1973, Ser. No. 410,247
Int. Cl. G01g *21/02;* **F16j** *15/50;* **F02j** *11/00*
U.S. Cl. 177—179 **17 Claims**

1. A liquid repelling shield device for use between two relatively movable members, comprising,

a. an arrangement of inner and outer tubular elements mounted on one of said members, and

b. an outer, skirted cover, mounted on the other of said members and having the skirt portion thereof surrounding said tubular elements in spaced relation thereto,



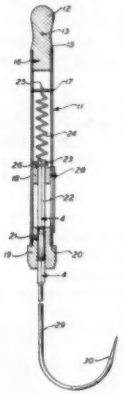
c. whereby the space within said inner element will be protected against the entry of liquid under pressure thereinto, and still allow freedom of movement between said members.

3,848,689

GAFF-SCALE WITH LOCK

Karl Hilterhaus, 19 Coeyman Ave., Nutley, N.J. 07110

Continuation-in-part of Ser. No. 289,797, Sept. 11, 1972, Pat. No. 3,743,042. This application Apr. 30, 1973, Ser. No. 355,566
Int. Cl. G01g *3/02;* **B65g** *7/12*
U.S. Cl. 177—233 **5 Claims**



1. A gaff-scale comprising:

a. a generally elongated hollow housing having a longitudinal slot,

b. a first guide for a rod attached in the housing,

c. a non-circular passage in the first guide,

d. a rod in the housing having a portion slidable in the passage in the first guide,

e. the portion of the rod slidable in the passage in the first guide provided with a non-circular cross-sectional configuration corresponding closely to the passage in the first guide, whereby torsional movement of the rod is inhibited;

f. a spring in the housing,

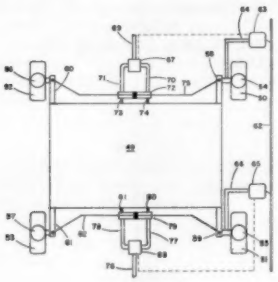
g. an end of the spring attached to the housing above the first guide,
h. another end of the spring attached to an end of the rod above the first guide,
i. an index on the rod visible in the longitudinal slot in the housing,
j. a scale on the housing arranged in visible relation to the index,
k. a second guide for the rod attached to the bottom of the housing,
l. the second guide having a non-circular passage,
m. a portion of the rod slidable in the passage in the second guide and provided with a cross-sectional configuration corresponding closely to the passage in the second guide, whereby torsional movement of the rod is inhibited,
n. an integral hook on a portion of the rod outside of the housing,
o. a strip in the passage in the second guide engageable with the rod.
p. a pivotable latch mounted in a slot in the second guide and engageable and disengageable with the strip.

3,848,690

VEHICLE STEERING CONTROL SYSTEM

Royal R. Hawkins, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 2, 1971, Ser. No. 172,333
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 **6 Claims**



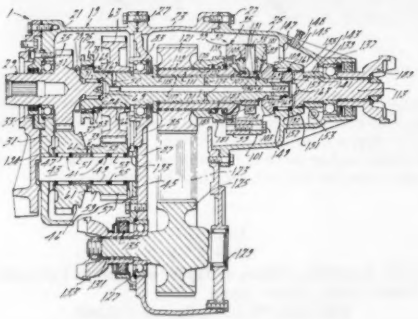
1. A system to control the steering of a vehicle having right and left propelling means capable of being driven at different speeds, the system comprising:
right variable speed driving means adapted to drive the right propelling means;
left variable speed driving means adapted to drive the left propelling means;
a source of direct current potential having first and second terminals;
a speed control potentiometer having a resistive element connected between said first and second terminals and having a wiper arm;
first connecting means connecting said wiper arm to the right variable speed driving means;
second connecting means connecting said wiper arm to the left variable speed driving means;
manual steering control means connected to said first and second connecting means to relatively adjust the power to the right and left variable speed driving means; and
automatic steering control means comprising sensing means responsive to a preset reference for automatically controlling the steering of the vehicle, said automatic steering control means connected in parallel with said manual steering means to relatively adjust the power to the right and left variable speed driving means,
wherein said speed control means controls the right and left variable speed driving means in unison to affect speed control and said manual and automatic steering control means controls the right and left variable speed driving means relative to one another to affect steering control.

3,848,691

FULL TIME FOUR WHEEL DRIVE

Courtney F. Dolan, Syracuse, N.Y., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation of Ser. No. 311,045, Nov. 30, 1972. This application Oct. 24, 1973, Ser. No. 409,342
Int. Cl. B60k *17/34*
U.S. Cl. 180—44 R **34 Claims**



1. A transfer case for power drive systems comprising a housing, an input shaft, a rear wheel output shaft and a front wheel output shaft rotatably mounted in said housing, a differential carrier member, means for connecting said input shaft to said differential carrier member in a driving relationship, said means including an intermediate shaft member, a plurality of gear means adapted to connect said input shaft to said intermediate shaft member, a pinion member carried by said differential carrier member, first and second side gear members in mesh with said pinion member on opposite sides thereof to permit rotation of said side gear members at different speeds, means drivingly connecting said first side gear member to said front wheel output shaft, said second side gear member being connected to said rear wheel output shaft, and locking means drivingly and movably connected to one of said members and adapted to be moved between a first position out of engagement with one of said members and in which said differential carrier member may rotate relative to said side gear members and a second position in engagement with said one member for locking it to another one of said members for locking said intermediate shaft member differential carrier member, pinion member and side gear members together.

3,848,692

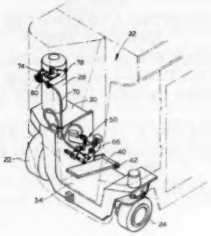
DUAL BRAKE ON DRIVE AND IDLER WHEELS OF INDUSTRIAL TRUCKS

John S. Messner, and Robert E. Jones, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 26, 1973, Ser. No. 428,502
Int. Cl. B60k *17/30*
U.S. Cl. 180—52 **10 Claims**

1. In a power driven material handling truck having a base frame and wheels supporting the front end of the frame, a rear drive-steer wheel supported from the base frame on one side of the truck and spaced a first lateral distance from the center line thereof, a rear idler wheel supported from the base frame on the opposite side of the truck and spaced a second lateral

distance from the center line thereof which is greater than the said first distance, said idler wheel being of smaller diameter than said drive-steer wheel, and brake means for braking both said rear mounted wheels comprising a brake external of said



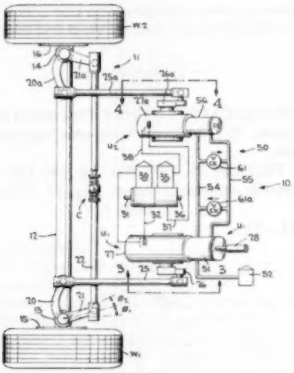
drive-steer wheel for braking said latter wheel, a brake internal of said idler wheel for braking said idler wheel, and single operator control means connected to both said external and internal brakes for engaging said brakes.

3,848,693

DUAL HYDRAULIC POWER STEERING SYSTEM WITH HYDROSTATIC CONTROL

Richard H. Sheppard, c/o R. H. Sheppard Co., Inc., Hanover, Pa. 17331

Filed Nov. 1, 1973, Ser. No. 411,823
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2 **6 Claims**



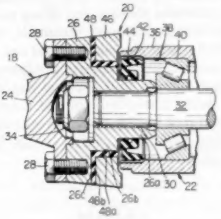
1. In a dual hydraulic power steering system for coordinated turning wheels of a vehicle comprising first and second power operating units, steering linkage means provided between said wheels and said power operating units to interconnect the same, corresponding first and second power supply means interconnected to the corresponding operating units, first and second control means to direct the flow of fluid as required to steer the vehicle, means for coupling said control means, steering shaft means to operate said first control means and said coupling means, each combination of operating unit, control means and supply means being independent for directly turning separate wheels and each combination providing less than the total maximum design force required to allow the operator of the vehicle to comfortably turn said wheels, the improvement comprising in said coupling means, overdrive means effective to operate said second control means so as to lead said first control means in operation of said operating units, and coordinating means to limit the effectiveness of said coupling means in response to a predetermined torque applied to said steering shaft means, whereby both of said combinations may normally operate in said system but with leading by said second combination, and, upon failure of one combination, partial force power steering may still be effective.

3,848,694

TORSIONAL DAMPER FOR MOTOR VEHICLE DRIVE TRAIN

Masashi Matsui, and Teisuke Horio, both of Yokohama City, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 7, 1972, Ser. No. 311,713
Claims priority, application Japan, Jan. 10, 1972, 47-5445
Int. Cl. B60k *23/00*
U.S. Cl. 180—70 P **4 Claims**



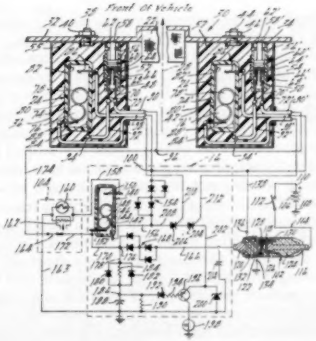
1. A motor vehicle drive line comprising, a differential gear unit having a differential pinion drive shaft, a companion flange surrounding the forward end of said pinion shaft, and a torsional vibration damper having an annular resilient member mounted on an axial end surface of said companion flange and an annular inertia member secured about said resilient member, said resilient member and said inertia member coaxially surrounding said companion flange.

3,848,695

APPARATUS FOR CONTROLLING AN INFLATABLE SAFETY DEVICE

Leonard Lacaze, Jr., Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 2, 1973, Ser. No. 347,266
Int. Cl. B60n *21/08*
U.S. Cl. 180—103 **7 Claims**



1. In a motor vehicle having a passenger compartment, an inflatable safety device positioned within said passenger com-

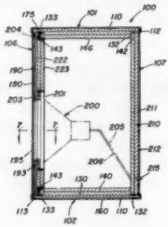
partment for restraining a vehicle occupant during a crash of said vehicle, a radiator positioned forward of said passenger compartment and a source of electrical energy; apparatus for controlling the inflation of said inflatable safety device, said apparatus comprising: electrically actuated means for causing the inflation of said inflatable safety device, said inflation causing means being connected to one terminal of said source of electrical energy; a first switch attached to said radiator or its support structure, said first switch being responsive to a predetermined acceleration; a second switch connected in series with said first switch, said second switch being located in said passenger compartment and being responsive to a predetermined acceleration less than that to which said first switch is responsive; and a thermal cut-off device having a first and second terminal, said first terminal of said thermal cut-off device being connected to the other terminal of said source of electrical energy, said second terminal of said thermal cut-off device being connected through said first and second switches to said inflation causing means, said thermal cut-off device having a fusible element therein and being normally conductive between its first and second terminals, said fusible element when melted rendering said thermal cut-off device nonconductive between its first and second terminals; and a resistance wire coiled around said thermal cut-off device, said resistance wire being connected to said source of electrical energy and to said first switch to supply current to said resistance wire when said first switch is in its accelertion-responsive condition.

3,848,696

LOUD SPEAKER HOUSING SYSTEMS

Scott F. Everitt, Indianapolis, Ind., assignor to Acoustic Fiber Sound Systems, Inc., Indianapolis, Ind.

Filed June 9, 1972, Ser. No. 261,340
Int. Cl. H04r *1/28;* **G10k** *13/00*
U.S. Cl. 181—31 B **28 Claims**



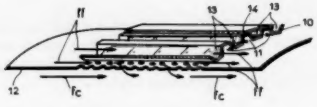
1. A loud speaker system having a housing comprising a bendable carrier sheet of sufficient length to form a top wall, a first side wall, a second side wall and a bottom wall, at least two layers of corrugated material fixedly mounted to said carrier sheet and to each other and arranged in a laminated stack with the corrugations of one of said layers extending in a direction substantially perpendicular to the direction of the corrugations of the other of said layers, a V-shaped groove in the laminated stack of corrugated material at at least three of the points at which junctures are to be formed between said walls, each of said V-shaped grooves extending transversely of the corrugated material along the entire width thereof and through the corrugated material, and means for connecting together the ends of said bendable carrier sheet and the ends of said corrugated material and the junctures at said V-shaped grooves to provide parallel spaced apart top and bottom walls interconnected by parallel and spaced apart first and second side walls, each of said walls including a portion of said carrier sheet and two superimposed layers of corrugated material in which the corrugations in one layer extend in a direction substantially perpendicular to the corrugations in the other layer, spaced apart front and rear walls interconnecting said side walls, said top wall and bottom wall, said front wall having an aperture therein and loud speaker means mounted in said housing in registry with said aperture.

3,848,697

ACOUSTIC DAMPING AND COOLING OF TURBOJET EXHAUST DUCTS

Michel Rene Jannot, Sceaux; Robert Guillaume Vaillant, Paris, and Serge Yvan Dzalba-Lyndis, Villejuif, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed July 3, 1973, Ser. No. 376,214
Claims priority, application France, July 4, 1972, 72.24082
Int. Cl. B64d *33/06*
U.S. Cl. 181—33 HB **12 Claims**



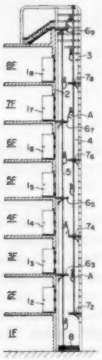
1. An exhaust duct inside which flows a hot turbojet flow and outside which flows a cooler turbojet flow, comprising in combination: at least one non-perforated external annular sheet; at least one perforated internal annular sheet; and a longitudinally corrugated element positioned between said external and internal annular sheets, noise attenuation chambers communicating with said hot flow being bounded by said perforated internal sheet and said corrugated element and cooling chambers communicating with said cooler flow being bounded by non-perforated external sheet and said corrugated element.

3,848,698

EMERGENCY ESCAPING DEVICE FOR HIGH BUILDING

Yoichiro Kanbe, 31-7, 2-chome, Sakae-cho, Soka-shi, Saitama-ken, Japan

Filed July 25, 1973, Ser. No. 382,331
Claims priority, application Japan, Aug. 31, 1972, 47-87484
Int. Cl. A62b *1/20*
U.S. Cl. 182—83 **5 Claims**



1. An emergency escaping device for high building comprising

a. an integral of vertically serial protection piping frames having a plurality of cross plates or arms, said frames

being faced apart with the emergency exits of the building and the building exterior wall and being usable as emergency escaping ladders;

b. a plurality of poles within said protection piping frames for which peoples escape sliding down, said poles being aligned in two rows in forward and backward seeing from said protection piping frames;

c. a plurality of stepping plates being located at every other emergency exit at the building floors, said stepping plates being provided with said several vertical poles in the backward row therethrough spaced at a proper distance from the several poles in the forward position;

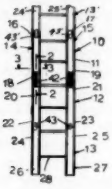
d. a plurality of resting plates being located at the protection piping frames at the same level with every other floors in different from aforegoing floors having said stepping plates, said resting plates being provided with several poles therethrough spaced at a proper distance from the backward poles.

3,848,699

INTERLOCKING BUCKING HINGE AND LADDER COMBINATION

Charles W. Goodwin, Erie, Pa., assignor to PMCS Company, Inc., Erie, Pa.

Filed May 7, 1973, Ser. No. 357,926
Int. Cl. E06c *1/383*
U.S. Cl. 182—163 **11 Claims**



1. A hinge comprising

a first stack of platelike members and a second stack of platelike members,

said first stack of platelike members comprising first links haVing first spacers disposed therebetween,

and said second stack of platelike members comprising second links having second spacers disposed therebetween,

a first end of said first links extending beyond a first end of said first spacers,

and a first end of said second links extending beyond the first end of said second spacers,

said first links having laterally extending portions extending laterally beyond the sides of said first spacers,

said second links having laterally extending portions extending laterally beyond said sides of said second spacers and disposed between said laterally extending side portions of said first links,

pivot means connecting said side portions of said first links to the laterally extending side portions of said second links,

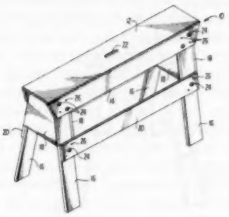
the ends of said first portion of said second links being adapted to engage the ends of said first spacers when said second links are swung into alignment with said first links, said first links and said second links defining a space between when said second links are swung into spaced parallel relation to said first links.

3,848,700

SUPPORTING DEVICE

Thomas Jefferson Davis, Jr., 505 University Ave., Lubbock, Tex. 79401

Filed June 26, 1973, Ser. No. 373,807
Int. Cl. F16m *11/00*
U.S. Cl. 182—181 **6 Claims**



1. A supporting device, comprising:

an elongated top panel having a wide, substantially flat upper surface,

a pair of legs secured to said top panel near each end thereof to support it in an elevated position, said legs of each pair being inclined downwardly and outwardly from said top panel relative to a substantially vertical plane extending longitudinally through the center portion of the supporting device and a substantially vertical plane extending substantially transversely through the center portion of the supporting device,

an elongated side panel disposed adjacent each side of said end panel and being inclined downwardly and outwardly therefrom in overlapping relation to the upper side portions of said legs adjacent thereto, said side panels being secured to said top panel and to said legs, and

an end brace member secured to the inner end surface and the outer end surface of the upper portions of the legs of each of said pair of legs, each end brace member comprising an upper surface in engagement with the lower surface of said top panel, downwardly and outwardly inclined side surfaces in substantial alignment with the outer side surfaces of the pair of legs adjacent thereto, and a bottom surface that is substantially parallel to said upper surface thereof, the bottom surfaces of said end brace members being disposed in a substantially common plane that is substantially parallel to said upper surface of said top panel, the portion of said bottom surfaces extending between each pair of said legs being of a length that is greater than the width of said upper surface of said top panel, and

the length of said top panel being greater than the longitudinal distance between the end brace members having the greatest longitudinal spacing therebetween,

thereby enabling more than one supporting device to be stacked by resting said bottom surfaces of said end brace members of one supporting device on the upper surface of the top panel of another supporting device.

3,848,701

SAWHORSE BRACKET

Elmer J. Hughes, 13613 San Pablo Ave., No. 17, San Pablo, Calif. 94806

Filed Sept. 10, 1973, Ser. No. 395,950
Int. Cl. F16b *7/00*
U.S. Cl. 182—185 **9 Claims**

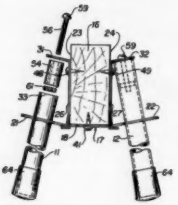
1. A device for demountably connecting the legs and ridge beam of a sawhorse comprising:

a base member adapted for mounting at and securing to the underside of said beam and having portions formed to extend laterally from the opposite sides of said beam;

a pair of strap members;

means connecting said base and strap members with the latter, extending vertically from said base member and spaced apart for engagement with and being adapted for securing to said beam sides;

said base member portions being formed with openings



dimensioned to slidably receive a pair of legs and said strap members being formed with laterally extending parts spaced from said base portions and in alignment with said openings, in the attached position of said base and strap members, for engaging the upper ends of said legs threaded through said openings; and

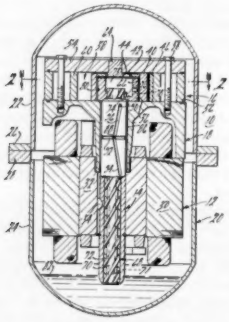
means for demountably fastening said parts and legs.

3,848,702

LUBRICATING SYSTEM FOR VERTICAL MACHINE ELEMENTS

Ernest R. Bergman, Fort Loramie, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Oct. 2, 1972, Ser. No. 294,005
Int. Cl. F01m *7/00*
U.S. Cl. 184—6.3 **10 Claims**



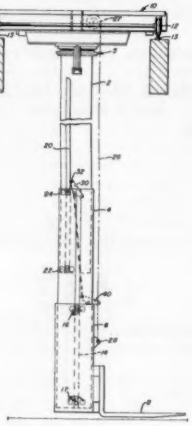
1. In combination, means providing a main lubricant reservoir wherein lubricant normally stands at a level, a generally vertically disposed drive shaft having a journal, means supporting said drive shaft with said journal disposed above said level, and providing a bearing for said journal, means for rotating said drive shaft, means for lubricating said bearing comprising means defining a recess within said drive shaft adjacent said bearing and defining a passage through which lubricant may flow from said recess to said bearing driving rotation of said drive shaft, lubricant pump means extending into said main lubricant reservoir below said level and extending into said recess and effective to pump lubricant from said main lubricant reservoir into said recess, said means defining said recess including means retaining lubricant therein when rotation of said drive shaft stops and said lubricant pump means stops so that such retained lubricant may flow therefrom through said passage to lubricate said bearing when rotation of said drive shaft resumes, said recess communicating with the interior of said tubular drive shaft and said means for retaining lubricant within said recess comprising a dam between said recess and the interior of said tubular drive shafting.

3,848,703

LATCHING MECHANISM FOR TELESCOPING LIFTING APPARATUS

Frederick Stanley Rundle, Montour Falls, N.Y., assignor to Shepard Niles Crane & Hoist Corporation, Montour Falls, N.Y.

Filed May 1, 1972, Ser. No. 249,374
Int. Cl. B66b *5/16*
U.S. Cl. 187—73 **4 Claims**



1. A telescoping load lifting apparatus comprising a fixed mast portion, a movable mast portion and load bearing portion wherein said movable mast portion and said load bearing portion are individually and conjointly vertically movable with respect to said fixed mast portion and individually vertically movable with respect to each other,

latching means comprising vertically spaced apart upper and lower latch lever means,

each of said latch lever means pivotally mounted upon said movable mast portion,

said lower and upper latch lever means being operably interconnected whereby said lower latch lever means may selectively engage and disengage said load bearing portion whereby said movable mast portion and the load bearing portion are vertically moved conjointly from their most extended position to a predetermined elevation, and whereby said upper latch lever means may selectively engage and disengage said fixed mast portion for selectively supporting said movable mast portion during further vertical movement of said load bearing portion above said predetermined elevation.

ERRATUM

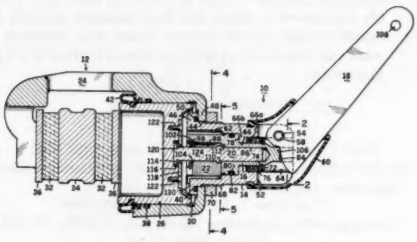
For Class 187—86 see:
Patent No. 3,848,706

3,848,704

PARKING BRAKE AND WEAR ADJUSTMENT MEANS

Edward J. Falk, St. Louis, Mo., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Nov. 19, 1973, Ser. No. 417,251
Int. Cl. F16d *65/52*
U.S. Cl. 188—71.8 **18 Claims**



1. In a caliper disc brake assembly of the type including a hydraulically actuated piston wherein the piston is slidable in a caliper bore and is actuated upon introduction of hydraulic fluid pressure forces to urge the piston and associated brake pad assembly into braking engagement with the disc, the improvement comprising:

an outer housing mounted on the caliper;

an actuating piston movably mounted within the outer housing for movement relative thereto;

actuating means mounted on the outer housing to engage the actuating piston and to apply a force thereto to move the piston relative to the housing;

an adjusting stem mounted within the actuating piston and provided to receive the force applied to the actuating piston by the actuating means and to transmit that force to the piston slidable in the caliper bore to urge the brake pad assembly into braking engagement with the disc;

a plurality of radially independently expandable means provided within the actuating piston for compensating for wear resulting from repeated braking engagement of the brake pad assembly and the disc; and

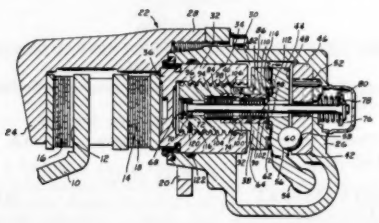
a single radially outwardly extending shoulder portion annularly disposed about the stem and intermediately of the length of the stem for engaging the radially expandable means.

3,848,705

APPLICATION ADJUSTER FOR DISC BRAKE

Richard T. Burnett, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Aug. 13, 1973, Ser. No. 387,876
Int. Cl. F16d *65/56*
U.S. Cl. 188—71.9 **10 Claims**



1. In a disc brake:

a rotor having two friction faces, one on each side of the rotor;

two friction members positioned respectively adjacent said two friction faces;

a torque member;

a caliper housing slidably mounted on said torque member and operatively connected to said friction members for urging the members into engagement with their respective adjacent friction faces during a brake application;

said caliper housing defining a chamber and brake actuating mechanism in the chamber for advancing said friction members toward their respective adjacent friction faces; said actuating mechanism including an extendible member slidably carried in the chamber and operatively connected to one of said friction members, said extendible member being formed of two relatively rotatable parts which extend one with respect to the other upon relative rotation therebetween, rotatable cam means in the chamber drivably connected to the extendible member for sliding the latter upon rotation of said cam means; and

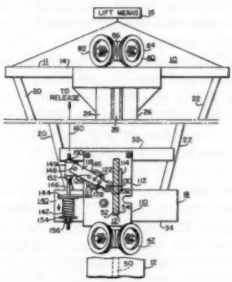
clutch mechanism for connecting the cam means to one of said parts upon brake application and for disconnecting the cam means upon brake release so that the latter can rotate relative to said one part, said clutch mechanism including lost motion means for permitting said cam means to initially rotate relative to said one part a predetermined distance upon brake application, and additional means for connecting said one part to said cam means for rotation therewith after said cam means is rotated through said predetermined distance, said clutch mechanism also including a pair of coil springs connected in series driving relationship between the cam means and said one part in such manner that the respective springs develop predetermined different torques for brake application and for brake release.

3,848,706

LIFT APPARATUS

Richard H. Darwent, Hopatcong, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 3, 1973, Ser. No. 421,713
Int. Cl. B66b *5/18*
U.S. Cl. 187—86 **7 Claims**



1. Lift apparatus comprising:

a structure including first and second spaced guide rails, each of said guide rails having first and second opposed side guide surfaces,

and first and second safety devices carried by a platform which operative on said first and second guide rails, respectively,

each of said safety devices including a back-up plate, and a cam member having a circular portion, said back-up plate and cam member being disposed adjacent to but spaced from the first and second side guide surfaces, respectively, of a guide rail, an actuating arm, means pivotally mounting said actuating arm coaxial with the circular

portion of said cam member, and a roller carried by said actuating arm,

said actuating arm, when pivoted about a predetermined angle, directing said roller about the circular portion of said cam member into engagement with the second side guide surface of its associated guide rail, said actuating arm and roller having a predetermined clearance between their engaging surfaces selected to enable the actuating arm to position the roller against the guide rail while being isolated from forces generated between the engaging cam member, roller, guide rail and back-up plate.

3,848,707

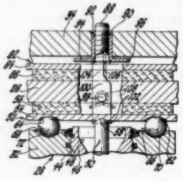
DISC BRAKE ADJUSTER

Frank W. Brooks, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 13, 1973, Ser. No. 388,069

Int. Cl. F16d *65/56*

U.S. Cl. 188—71.9 **1 Claim**



1. A disc brake comprising:

a rotatable disc to be braked, a caliper having first and second legs extending on each side of said disc, first and second friction brake pad assemblies respectively mounted on said first and second caliper legs to frictionally engage the opposed sides of said disc when the brake is actuated, and brake actuating means on said first leg when actuated moving said first friction brake pad assembly into engagement with said disc;

said brake actuating means including a piston recessed to receive a push rod extending toward and engaging said first friction brake pad assembly for transmitting brake actuating force thereto in response to the application of brake actuating force on said piston;

first piston means mounting said first friction brake pad assembly on said first leg for limited movement in the direction of rotation of said disc when said first friction pad assembly engages said disc while said disc is rotating, the amount of such movement being in accordance with the amount of unadjusted wear of said friction brake pad assemblies, said mounting means including first and second pairs of mating ramps respectively formed in said first leg and said first friction brake pad assembly and a ball received between each mating pair of ramps substantially in line with said piston push rod in the direction of limited movement of said first friction brake pad assembly in the direction of rotation of said disc;

second means mounting said second friction brake pad assembly on said second leg and including a first threaded member secured to said second friction brake pad assembly and extending away from said disc in axial alignment with said piston push rod and a second threaded member in threaded relation with said first threaded member and rotatably received in said second leg in axial alignment with said piston push rod and having a peripherally toothed flange extending beyond said second friction brake pad assembly and parallel to said disc;

and an adjuster pawl pivotally mounted on said caliper and extending across said disc and having one end engaging said first friction brake pad assembly in driven relation whereby said adjuster pawl is pivoted in a plane substantially parallel to the axis of said disc when said first friction brake pad assembly moves in the direction of rotation as aforesaid and has a spring urging the pawl in the opposite pivoted direction, the other end of said pawl acting on said teeth of said second threaded member in a ratchet-like manner in one pivotal direction to rotate said second threaded member upon a predetermined minimum amount of such first friction brake pad assembly movement to move said first threaded member and therefore said second friction brake shoe assembly toward said disc to adjust for wear of said friction brake pad assemblies.

3,848,708

FRICTION PAD FOR DISC BRAKE ASSEMBLY

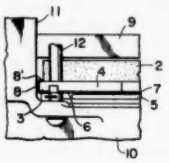
Takeshi Noguchi, Osaka, Japan, assignor to Sumitoma Electric Industries, Ltd., Osaka, Japan

Filed June 7, 1973, Ser. No. 367,989

Claims priority, application Japan, June 7, 1972, 47-66934

Int. Cl. F16d *65/02*

U.S. Cl. 188—73.1 **3 Claims**



1. In a disc brake assembly in which a friction pad is mounted in planar confronting fashion for a limited movement toward and away from a rotatable braking disc and wherein the ends of said pad move parallel to a guide surface adjacent thereto which is subject to rusting, and wherein said pad comprises a lining which faces and frictionally engages said disc and a back plate overlying the surface of said lining remote from said disc and having ends projecting beyond said lining, the improvement comprising: a stainless steel sheet overlying the back plate and having peripheral projecting end portions elastically covering the ends of said back plate along at least those portions of said back plate whose ends face said guide surface, said sheet peripheral end portions being bent over the projecting ends of said back plate with the sheet edges elastically gripping the lining side of said back plate inwardly of said back plate ends adjacent corner contact lines between said lining and said back plate with the confronting surfaces of said back plate ends and said stainless steel sheet end portions being spaced from each other such that said sheet end portions move elastically relative to the ends of said back plate to facilitate movement of said back plate relative to said guide surface regardless of rust accumulation thereon.

3,848,709

DISC BRAKE CALIPER AND FRICTION PAD MOUNTING STRUCTURE

Roger Tourneur, Saint-Maur, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed July 2, 1973, Ser. No. 376,059

Claims priority, application France, July 12, 1972, 72.25256

Int. Cl. F16d *55/224*

U.S. Cl. 188—73.3 **6 Claims**

1. In a disc brake:

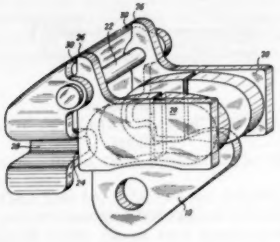
a rotor having a pair of friction faces;

a U-shaped fixed support straddling said rotor and presenting a pair of legs extending generally parallel to each of said friction faces,

a pin carried by said fixed support at one edge of each of said legs, said pin extending across said rotor in a direction generally parellel to the axis of the rotor,

a pair of friction elements mounted on said pin adjacent each of said friction faces,

said one edge of each of said legs having a pair of bearing surfaces for anchoring its corresponding friction element, said pair of bearing surfaces being located in alignment



on opposite sides of a plane intersecting said pin and perpendicular to a plane extending along a radius of the rotor and intersecting said pin so that each friction element anchors on one of said surfaces or the other of said surfaces, depending upon the direction of rotation of the rotor, and

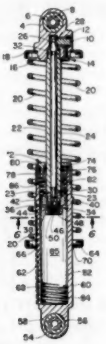
a clamping member slidably mounted on said fixed support for urging said friction elements into engagement with their corresponding friction faces.

3,848,710

SHOCK ABSORBER, PISTON AND VALVE STRUCTURE

John T. Thompson, Granada Hills, and Arnold A. Cowan, Tarzana, both of Calif., assignors to The Bobrick Corporation, North Hollywood, Calif.

Continuation of Ser. No. 179,752, Sept. 13, 1971, abandoned.
This application July 16, 1973, Ser. No. 379,612
Int. Cl. F16f *9/34*
U.S. Cl. 188—280 **16 Claims**



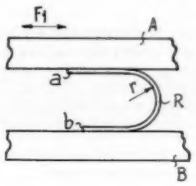
1. In a hydraulic shock absorber, the combination of: a pressure tube having closed radial walls and a reciprocable piston assembly therein dividing said pressure tube into first and second chambers; a single flow path connecting said chamber for fluid flow during jounce and rebound conditions; said assembly having at least first and second fluid passageways communicating to said single flow path through and from one side of said assembly to the other side open to hydraulic fluid flow during normal and jounce conditions, said at least first fluid passageway and said single flow path being centrally located in said assembly; and a single valve member controlling said hydraulic fluid flow through said single flow path and being responsive to hydraulic fluid differential pressure to close said at least second fluid passageway during rebound conditions and restrict the flow of hydraulic fluid in said pressure tube through said single flow path from said other side of said assembly to said one side; and a body of shock absorbing fluid positionable on one side of said piston assembly.

3,848,711

ELECTRICAL COUPLING BETWEEN ELEMENTS IN RELATIVE MOTION IN RESPECT OF EACH OTHER

Claude Brenot, and Gaston Mollard, both of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 180,003, Sept. 13, 1971, abandoned.
This application July 12, 1973, Ser. No. 378,628
Int. Cl. H02g *11/00*
U.S. Cl. 191—12 R **2 Claims**



1. A rotary electrical coupler between two elements relatively rotatable about an axis of rotation over a limited angular displacement comprising, in combination:

a. said two elements each of which include a first element and a second element, said first element being positioned radially inwardly with respect to its associated second element, said first and second elements having respective cylindrical walls concentric with respect to said axis of rotation, said walls having at least one pair of opposite walls which are respectively integral with said first and second elements;

b. a plurality of conductive springs, each of said springs having a "U" shape forming two ends, two linear portions and a curved intermediate portion, said two ends being respectively attached to said first and second elements, said two linear portions applying pressure respectively on the two opposite walls of a said pair of walls, said springs rolling without slip on said walls during said limited angular displacement and including one group of springs for each of said pair of walls, the springs in each of said groups being staggered regularly and circularly about said axis of rotation; and

c. terminals for connecting said springs, each of said springs being connected by its two ends to two respective terminals for transmitting an electrical datum, said springs transmitting separate electrical data between said elements.

3,848,712

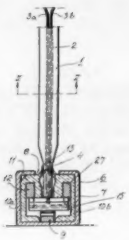
DEVICE FOR SUPPLYING AN OBJECT PROPELLED ALONG A RAIL OR THE LIKE WITH ELECTRICAL CURRENT

Bertil G. Flodell, Snapphenevagen 124, 17534 Jarfalla, Sweden

Filed Apr. 9, 1973, Ser. No. 349,407
Int. Cl. B60m *1/04*
U.S. Cl. 191—30 **3 Claims**

1. A device for supplying a vehicle with an electric drive motor, with current comprising a vehicle carried rod-like

current collecting means with a stream lined shaped part, wires housed extending through said means for connection to the vehicle drive motor, a hollow outer rail having a longitudinal slot, a hollow member of electrical insulating material housed within and extending the length of said outer rail and having a slot in line with said outer rail slot, said insulating



member having a pair of resilient lips normally closing said insulating member slot having said rod-like means extending between said lips through said insulating member slot, current carrying means in said insulating member, a body slideably mounted in said insulating means and contacts carried by said body connected to wires and slideably engaging said current carrying means.

3,848,713

BALL-JOINT SUPPORT DEVICE FOR A RAIL CONDUCTOR OF A CURRENT-COLLECTING SYSTEM

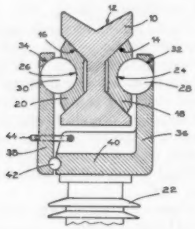
Daniel Laurent, Grenoble, and Hubert Ligones, Saint-Egreve, both of France, assignors to Societe Dauphinoise Electrique, Grenoble, France

Filed May 23, 1973, Ser. No. 363,259

Claims priority, application France, June 6, 1972, 72.20396

Int. Cl. B60m *1/30*

U.S. Cl. 191—32 **4 Claims**



1. A stationary support device for a current supplying rail conductor, comprising:

a pair of opposite support shoes having confronting side faces engaging the side faces of said rail conductor, respectively, said side faces of said shoes and of sail rail conductor being complementary shaped to permit relative longitudinal sliding motion of said rail conductor between said support shoes;

clamp means to urge said support shoes resiliently against said rail conductor and

ball-joint means interconnecting said clamp means and said support shoes to admit of small free rotary motion of said rail conductor relative to said support device.

3,848,714

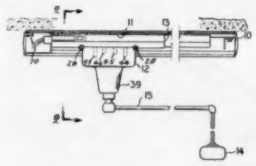
LOW ELECTRICAL LEAKAGE SUPPORT

Patrick H. Claxton, Brampton, Ontario, Canada, and Thomas A. Keenan, Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Dec. 26, 1972, Ser. No. 318,556

Int. Cl. B60n *1/04*

U.S. Cl. 191—33 **13 Claims**



1. A support for an electrical system comprising

a main first channel track having means including a first web and spaced downwardly extending first and second flanges attached to said first web,

second channel means supporting bus bars on said main track,

said second channel means having a second web, a third flange and a fourth flange,

a first bus bar supported on said second web and a second bus bar supported on said third flange and a third bus bar supported on said fourth flange,

means for connecting said bus bars to a source of electricity, said second channel means comprising dielectric means between said bus bars and said main track whereby a low electrical leakage results between said bus bars and said track.

3,848,715

ADAPTOR FOR AN ELECTRICAL POWER DISTRIBUTOR TRACK

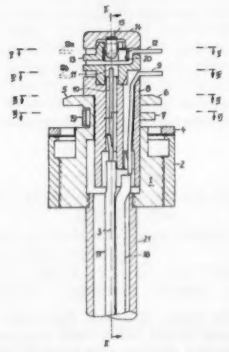
Kurt Hesse, Waterfohr 38, 492 Lemgo, Germany

Filed Mar. 26, 1973, Ser. No. 344,664

Claims priority, application Germany, Apr. 1, 1972, 2216145

Int. Cl. B60l *5/00;* **H01r** *9/00*

U.S. Cl. 191—45 R **17 Claims**



1. An adaptor for an electrical power distribution track adapted to be fitted into the open channel of the said track in a first position and adapted to be rotated to a second position

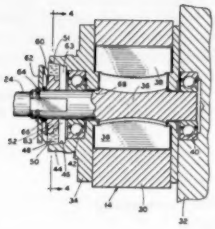
for making electrical contact therewith, said adaptor comprising spring loaded contact means for making contact with electrical power lines in said track, holding elements on said adaptor adapted to be located in recesses provided in the track, and means for locking the adaptor into position, said adaptor having an electrical selector contact which can be variably positioned for selectively making contact with different power lines in said track, said selector contact being assembled in a rotatable part arranged to selectively provide contact with an upper and/or lower power line on either side of the distribution track channel, and said selector contact being connected in the adaptor to current conducting parts operative to conduct current to the consuming element.

3,848,716

PNEUMATIC OPERATED MOTOR AND BRAKE FOR HOIST

John R. Hanning, Bryan, Ohio, assignor to The Aro Corporation, Bryan, Ohio

Filed June 14, 1973, Ser. No. 370,172
Int. Cl. F16d *55/18*
U.S. Cl. 192—3 R **10 Claims**



1. An air motor driven device comprising in combination: a housing with a rotary air motor, said motor having an output shaft;

said housing also including an end plate with means for mounting the shaft through said plate;

brake means for said motor, said brake means including:

a fixed friction surface defined in said housing;

a rotating member mounted to rotate with said shaft, said member also including a friction surface;

biasing means engaging one side of said member and biasing said friction surface of said member axially into cooperative braking contact with said fixed friction surface; and fluid inlet path means consisting only of clearances for fluid flow where said shaft extends through said end plate, said fluid providing a brake disengaging force to the opposite side of said member being displaced axially on said shaft to disengage said surfaces against the force of said biasing means when said motor is operated.

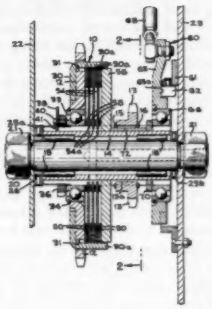
3,848,717

CLUTCH ACTUATING MECHANISM

George W. Culbertson, Oconomowoc, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Dec. 20, 1972, Ser. No. 316,774
Int. Cl. F16d *19/00*
U.S. Cl. 192—93 A **4 Claims**

1. A clutch mechanism comprising a rotatable shaft, a powered drive member rotatably mounted on said shaft, clutch means for connecting said drive member in driving engagement with said shaft, said clutch means including a plurality of members movable axially of said shaft to connect said drive member to said shaft, a rotary actuating mechanism mounted for rotation on said shaft and for axial movement therealong, a driven member keyed to said shaft and disposed in fixed position axially of said shaft between said actuating mechanism and said clutch means, and thrust means connecting said actuating mechanism to said clutch means so that rotation of



said actuating mechanism causes engagement of said clutch means without axial movement of said driven member, said shaft having longitudinal grooves therein underlying portions of said driven member and said thrust means including at least one elongate rigid member disposed in one of said grooves.

ERRATUM

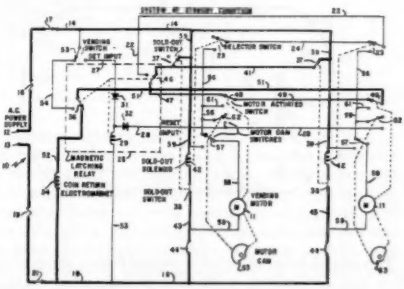
For Class 192—133 see:
Patent No. 3,848,721

3,848,718

VENDING MACHINE CONTROL CIRCUIT

Floyd V. Bookout, Long Grove, Ill., assignor to Rock-Ola Manufacturing Corporation, Chicago, Ill.

Filed Nov. 12, 1973, Ser. No. 414,753
Int. Cl. G07f *5/22*
U.S. Cl. 194—1 M **4 Claims**



1. A control circuit for use in an automatic coin-operated vending machine having a plurality of electric vending motors each being operable when energized from a power supply to control an associated commodity vending mechanism, comprising: keyboard means having a plurality of selectively operable selector switches, energization of said keyboard means serving to establish control circuit relationship between each

selector switch and an associated vending motor; bistable credit memory means having set and reset control inputs, said memory means being operable to assume credit and non-credit operating states thereof upon individual energization of said set and reset inputs respectively; vending switch means in circuit with the power supply and said memory means and being operable to set the latter into said credit state to precondition a vending cycle; additional switch means in circuit with the power supply and operatively controlled by said memory means, said additional switch means being operable to energize said keyboard means from the power supply in response to said credit operating state and to deenergize said keyboard means in response to said non-credit operating state; plural motor actuated switch means in series circuit with said additional switch means, each said motor actuated switch means being associated with a vending motor and being operable to provide a temporary supply hold circuit thereto in response to energization thereof upon operation of the selector switch associated therewith, each said motor actuated switch means being further operable to deenergize said keyboard means to prevent further operation thereof; first and second motor cam switch means in circuit with the power supply and associated with each vending motor to be operatively responsive to predetermined rotational movement of cam means driven thereby until completion of a vending cycle, said first motor cam switch means being operable to interrupt said temporary supply hold circuit thereto and to substitute therefor a second supply hold circuit from the power supply, and said second motor cam switch means being operable to energize said reset input of said memory means to reset the latter into said non-credit operating state; whereby a vending cycle of each motor controlled vending mechanism is preconditioned upon operation of said vending switch means and independently initiated by a single selector switch operation.

3,848,719

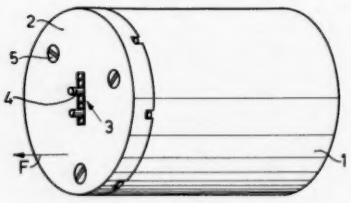
PRINTING DEVICE COMPRISING ELECTRO-MAGNETS

Lucien Milan, Garches, France, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed July 9, 1970, Ser. No. 53,418

Int. Cl. B41j *3/44*

U.S. Cl. 197—1 R **1 Claim**



1. A device for printing dots selected from a series arranged in a line, comprising a plurality of separately energizable elongated electro-magnets having parallel longitudinal axes arranged in a circle, a cylindrical enclosure surrounding the plurality of electro-magnets, each electro-magnet having an axial movable core, a plurality of L-shaped printing levers substantially radially arranged within the enclosure, each printing lever having one end attached to the enclosure and having an opposite end arranged within a line formed by said opposite ends, and a plurality of pushing members attached to the cores of the electro-magnets, each pushing member aligned with a corresponding printing lever, the printing levers exerting a biasing force on the pushing members in a direction corresponding to the rest position of the cores, said levers being formed by tongues punched from an elastic, flat disc fixed to the periphery of said cylindrical enclosure and pointing inwardly into the cylindrical enclosure, the end of each tongue being provided with a printing stylus.

3,848,720

PRESSURE SPRING FOR A THERMOPRINTER

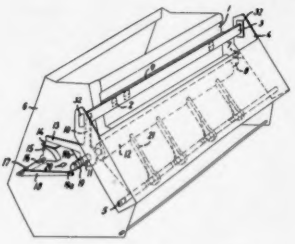
Henning Gunnar Carlsen, Aalbaek, Denmark, assignor to Contex Calculators A/S, Birkerod, Denmark

Filed Sept. 4, 1973, Ser. No. 394,245

Claims priority, application Denmark, Mar. 5, 1973, 1175/73

Int. Cl. G01d *15/10*

U.S. Cl. 197—1 R **8 Claims**



1. A thermoprinter comprising

a supporting frame;

a printing plate mounted in said supporting frame and including a line of typing means of an electric resistance material for printing line by line on a thermosensitive recording strip and means for selectively supplying heating current to said typing means;

pressing means for pressing said strip into contact with said printing plate during the printing of each line, said pressing means including a holder connected with said supporting frame, a leaf spring supported at its end in said holder in operative relation to the printing plate and extending in the line direction thereof with such a curvature in its unloaded condition that a convex lateral surface of the leaf spring faces the printing plate, and means for locking said holder to said supporting frame in a position in which said leaf spring is pressed against the printing plate with a substantially uniformly distributed pressure in the length direction of the leaf spring;

and an advancing mechanism for stepwise advancing said strip across the printing plate, said mechanism including actuator means for applying local bias forces in the direction away from the printing plate in points on said leaf spring situated a short distance from either end thereof supported in said holder, whereby the leaf spring is relieved from pressure contact with the printing plate when said strip is to be advanced.

3,848,721

SAFETY GUARD FOR PRESSES

Henry Smit, Kentwood, Mich., assignor to Leslie E. Tassell, Grand Rapids, Mich.

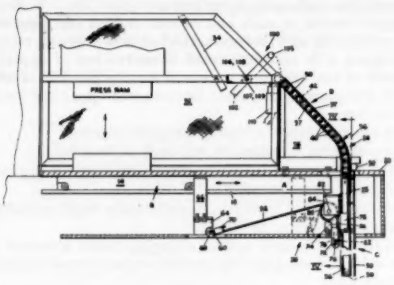
Filed Nov. 2, 1973, Ser. No. 412,466

Int. Cl. F16d *9/00*

U.S. Cl. 192—133 **31 Claims**

1. A safety guard for presses comprising a tambour-like panel including a plurality of elongated, rigid members; flexi-

ble means for securing said rigid members adjacent and parallel to one another; and means for movably securing said guard to a press.

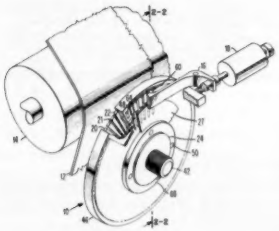


3,848,722

PRINT DISC ASSEMBLY FOR A PRINTER

Peter Samuel Bolan, Vestal; Aramis Duane Bryant, Johnson City; John Edward Drejza, Endwell; Charles Stephen Holovka, Endicott, and Ludwig Wilhelm Weber, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1973, Ser. No. 362,563
Int. Cl. B41j *1/32*
U.S. Cl. 197—53 **10 Claims**



1. In a print disc assembly for a printer having a movable carriage with a rotatable support shaft;

a support wheel secured to and rotatable with said shaft having a plurality of axial openings through said wheel adjacent the periphery thereof;

a resilient spoked print disc mounted on one side of and secured to said support wheel having integral type characters adjacent the ends of said spokes;

a plurality of slugs slideably disposed in said openings to engage different ones of said spokes, and

a resilient spoked interposer secured to and rotatable with said support wheel on the other side with the spokes of said interposer normally biasing said slugs against the corresponding spokes of said print disc.

3,848,723

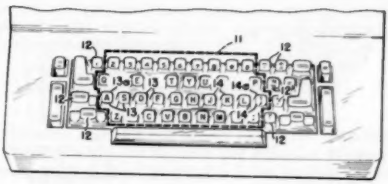
ADAPTER KEY CAPS

Lois M. Hogue, 3766 Dana Pl., San Diego, Calif. 92103

Filed July 23, 1973, Ser. No. 381,951
Int. Cl. B41j *5/16*
U.S. Cl. 197—102 **2 Claims**

1. In a typewriter having character and service keys arranged in aligned parallel rows and all being uniformly shaped with concave upper surfaces, an improvement therefor is provided comprising:

an adapter key cap fabricated from a lightweight material and having a shell-like wall appearance and further having the configuration of a lower-open-ended hollow pyramidal frustum sized to snugly fit over particular ones of said keys, the closed upper surface of the pyramidal



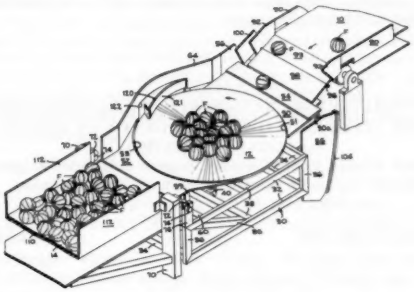
frustum is flat except for being provided with a single outwardly facing beveled projection along its rear perimeter having a cross-sectional shape defining an angle greater than ninety degrees at its apex to reduce the possibility of irritating a typist's fingers and to allow tactile identification, and the underside of the closed upper surface is coated with an adhesive to ensure connection to particular ones of said keys.

3,848,724

ACCUMULATOR FOR FRAGILE ARTICLES

Wilber C. Belk, Lakeland, Fla., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 14, 1974, Ser. No. 433,173
Int. Cl. B65g *47/22*
U.S. Cl. 198—29 **15 Claims**



1. Apparatus for accumulating fragile articles received at random from a delivery conveyor, said apparatus comprising a turntable mounted for rotation about a vertical axis and having a radially inwardly sloping article supporting surface, said turntable being normally positioned adjacent to said delivery conveyor so that said articles are delivered onto said surface from said delivery conveyor, means for continuously rotating said turntable as said articles are fed thereto so that said articles will gravitate to the center of the turntable in a generally uniform radial distribution, means for sensing when the turntable is filled with accumulated articles, and means operable upon the actuation of said sensing means for elevating the turntable to cause the accumulated articles to gravitate therefrom.

ERRATUM

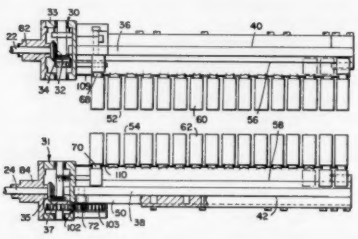
For Class 198—31 see:
Patent No. 3,848,746

3,848,725

DRIVEN-ARTICLE DROPPING MACHINE AND METHOD

Max E. Toby, San Francisco, Calif., assignor to Toby Enterprises, San Francisco, Calif.

Filed Feb. 14, 1973, Ser. No. 332,249
Int. Cl. B65g 57/00
U.S. Cl. 198—35 11 Claims



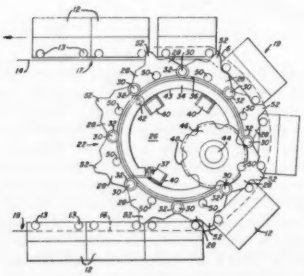
1. A method of handling articles which consists of sequentially depositing articles onto a longitudinally extending driven conveyor means at a receiving station disposed along the length thereof, directly supportingly engaging said articles on said conveyor means for substantially the greater portion of their width, positively moving said conveyor means and the articles deposited thereon from said receiving station along a longitudinal path having a width equal to the width of the article being conveyed and longitudinally spaced from said receiving station, and then moving said conveyor means in a direction other than along the longitudinal length thereof to provide a discharge opening for said articles in the longitudinal path of said conveyor means to thereby cause said articles to gravitally drop from said conveyor means immediately below said longitudinal path.

3,848,726

APPARATUS FOR TRANSFERRING PALLETS BETWEEN THE UPPER AND LOWER REACHES OF AN ENDLESS CONVEYOR SYSTEM

Erich Wiemer, Essen, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed May 2, 1973, Ser. No. 356,573
Int. Cl. B65g 35/00
U.S. Cl. 198—108 9 Claims



1. Apparatus for transferring a plurality of pallets between the upper and lower reaches of an endless conveyor comprising,

first endless engaging means for transferring each of said pallets from said lower reach to said upper reach,

second endless engaging means for transferring each of said pallets from said upper reach to said lower reach,

said second endless engaging means positioned remote of said first endless engaging means,

support means at each end of said endless conveyor for maintaining said first and second endless engaging means aligned with said upper and lower reaches at opposite ends of said endless conveyor to thereby provide transfer of said plurality of pallets between said upper and lower reaches,

said support means including a support member,

a ring member mounted on said support member,

fastening means for maintaining said ring member engaged to said support member,

said ring member having a circumferential track extending around the outer periphery,

said first and second endless engaging means arranged to revolve around said ring member in said circumferential track and,

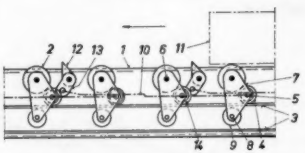
drive means for imparting rotational movement to one of said endless engaging means at a preselected angular velocity.

3,848,727

STOW ROLLER TRAIN FOR CARGO

Richard Gebhardt, H. Thomastrasse 10, 6920 Sinsheim, Germany

Filed Nov. 16, 1973, Ser. No. 416,504
Claims priority, application Germany, Feb. 16, 1973, 2307700
Int. Cl. B65g 13/02
U.S. Cl. 198—127 25 Claims



1. A stow roller train comprising:

a plurality of conveying roller sets spaced from one another in a conveying direction for sequentially conveyingly engaging articles to be conveyed,

a continuously movable traction means extending adjacent said plurality of conveying roller sets,

each of said conveying roller sets including an articlecarrying roller and an intermediate roller at one side of said traction means and a support roller at the other side of said traction means,

article position detecting means for detecting the position of an article on said article-carrying rollers,

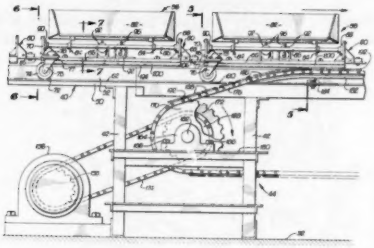
linkage means connected to said detecting means and to respective ones of said intermediate rollers for automatically effecting movement of said intermediate rollers between driving positons with the respective intermediate roller drivingly connecting the traction means with the respective associated article-carrying roller of the same conveying roller set and idling positions with the respective intermediate roller out of driving connection with the traction means and the respective associated article-carrying roller of the same conveying roller set in dependence on the position of said article,

and supporting roller mounting means interconnecting a supporting roller and intermediate roller of a given conveying set such that movement of said intermediate roller from an idling to a driving position thereof automatically results in movement of said supporting roller against the traction means to thereby press the traction means in a direction toward the intermediate roller.

3,848,728
CONVEYOR AND SORTING SYSTEM

Peter Leibrick, Diamond Bar, and Nick H. Terry, Temple City, both of Calif., assignors to Butz Engineering Corporation, Azusa, Calif.

Filed Feb. 1, 1973, Ser. No. 328,655
Int. Cl. B65g *17/00*
U.S. Cl. 198—155 12 Claims

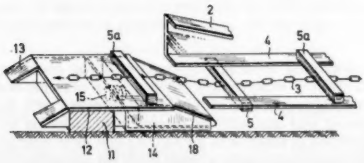


1. A closed loop parcel sorting conveyor system comprising an endless track means encompassing a horizontal area, a plurality of receptacle carriage means contiguously mounted on said track, coupling means uniting each of said receptacle carriage means one to the other forming an endless conveyor to ride on said endless track; each of said receptacle carriage means including guide wheels associated with said track portion to prevent lateral displacement, a pivotable receptacle portion forming a part of at least some of said receptacle carriage means, each of said pivotable receptacle portions being independently pivotal one from the other, and energizable linear actuators on said receptacle carriage means associated with said pivotable receptacles to tilt said receptacles normal to the line of travel and gravitationally discharge parcels thereon; in-line power means positioned on said track portion; two sets of friction contact means having flat surfaces thereon, the flat surfaces of the contact means of one set being adapted for engagement with the flat surfaces of the contact means of the other set, the contact means of said one set being part of said power means and the contact means of said other set being connected with said receptacle carriage means to sequentially translate power to effect forward movement of each of said receptacle carriage means and in turn move the entire contiguous endless conveyor around said endless track.

3,848,729
SCRAPER CONVEYOR

Reinold Krohm, Herne, Germany, assignor to Klockner-Werke AG, Duisburg, Germany

Filed May 8, 1973, Ser. No. 358,418
Claims priority, application Germany, May 9, 1972, 2222650
Int. Cl. B65g *19/22*
U.S. Cl. 198—171 22 Claims

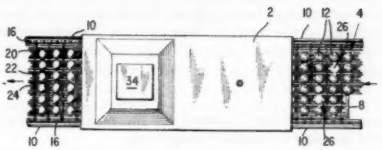


1. In a scraper conveyor, a combination comprising a pair of transversely spaced parallel guide rails defining an upper and a lower conveyor run, said rails having cutouts at said lower run; a chain of scraper elements; means for moving said scraper elements along said rails selectively in one and in an opposite direction, said scraper elements having opposite end portions engaged in the respective rails and at times subject to becoming disengaged therefrom; and restoring means comprising guide element means having pivotable flaps which are arranged to be contacted by disengaged scraper elements and to guide the end portions thereof into said cutouts, thereby restoring the end portions of the respective disengaged scraper elements into said rails.

3,848,730
EGG WASHER

Otto C. Niederer, deceased, late of Bear Tavern Rd., Titusville, N.J. 08560; Thomas O. Niederer, and Dennis A. Niederer, executors, both of Bear Tavern Rd., Titusville, N.J. 08560

Filed Mar. 8, 1972, Ser. No. 232,693
Int. Cl. B65g *15/00*
U.S. Cl. 198—183 3 Claims

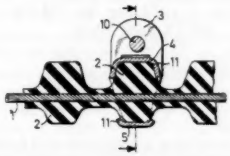


1. In equipment for use in washing or otherwise handling eggs embodying two spaced parallel supports, a conveyor embodying two parallel chains movable along said supports, a plurality of rods connected to said chains and extending in parallel relation transversely to the direction of movement of said conveyor, the improvement comprising molded plastic spool-like members surrounding said rods and each including a tubular central portion bearing against a rod and having a plurality of integrally formed radially extending circular egg supporting fins projecting outwardly from said central portion and lying in parallel planes extending in the direction of movement of the conveyor.

3,848,731
TOOTHED BELT WITH ARMOR AND SUPPORTING ELEMENTS FOR CONVEYING OR TRANSPORTING MEANS

Hans-Holger Wiese, and Horst Siemsen, Fuhrberg, both of Germany, assignors to Hans-Holger Wiese, Wieloweg, Germany

Filed Nov. 17, 1972, Ser. No. 307,542
Int. Cl. B65g *15/30*
U.S. Cl. 198—193 4 Claims

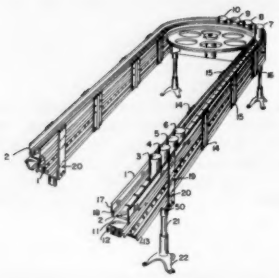


1. A toothed belt with teeth blocks consisting of elastic material, an armor cord and conveying and transporting means having supporting elements engaging selected tooth blacks and cover plates which are twice the width of a tooth block and which embracingly engage two adjacent tooth blocks.

3,848,732
RIVETED MODULAR CONVEYOR

James A. Catalano, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed May 1, 1972, Ser. No. 249,335
Int. Cl. B65g 15/60
U.S. Cl. 198—204 12 Claims



1. A conveyor frame structure for the passage of objects from one location to another comprising:

paired side guide means each extending along the length of the conveyor frame structure for supporting the rest of said frame and for guiding objects as they pass down the length of the conveyor frame structure;

a plurality of pairs of vertical frame members each having an upper portion and a lower portion and spaced from each other down the length of the conveyor frame structure;

fastening means for attaching each of said vertical frame members to a side guide means;

a horizontal conveyor carryway disposed along the length of said conveyor frame structure and comprising a single sheet of material extending laterally from vertical frame member to vertical frame member;

paired fastening means for attaching each of said plurality of pairs of vertical frame members to opposed sides of said horizontal conveyor carryway;

a conveyor return support member made of one continuous sheet of material mounted below and extending longitudinally the length of said conveyor carryway and extending laterally from vertical frame member to vertical frame member; and

paired fastening means for attaching each vertical frame member of said pairs of vertical frame members to said conveyor return support member.

3,848,733
ROTARY CONVEYOR

Jimmie D. McAlister, Bayard, Iowa 50029

Filed Feb. 1, 1973, Ser. No. 328,658
Int. Cl. B65g 29/00
U.S. Cl. 198—211 10 Claims

1. A rotary conveyor comprising,

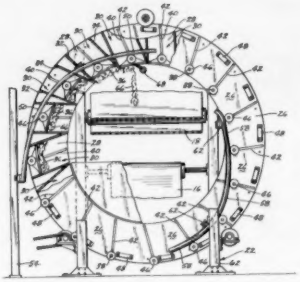
a support means,

a housing rotatably mounted on said support means about a horizontal axis

said housing comprising a peripheral wall having annular side walls extending radially inwardly therefrom, a plurality of storage cells in said housing defined by radially extending walls extending between said side walls,

a selectively movable plate member in each of said storage cells and being normally positioned adjacent said peripheral wall,

movable mounting means movably connecting said plate members to said housing whereby said plate members can be moved radially inwardly in their respective storage cells, said movable mounting means comprising an arm means secured to said plate member and extending outwardly through a radially extending slot in said side walls,

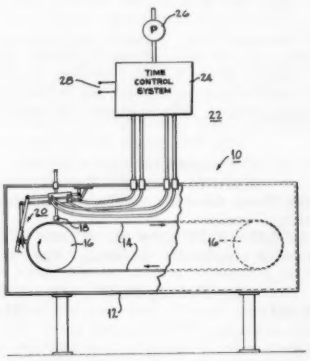


and a first and second cam track means each secured to said support means for selective engagement with said arm means as said housing is rotated to cause said plate members to move radially inwardly in their respective storage cells for at least a portion of one revolution of said housing to selectively dump the contents therefrom.

3,848,734
DOCTORING APPARATUS

Wolfgang K. Heiland, Trevose, Pa., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 14, 1973, Ser. No. 370,094
Int. Cl. B65g 45/00
U.S. Cl. 198—230 2 Claims



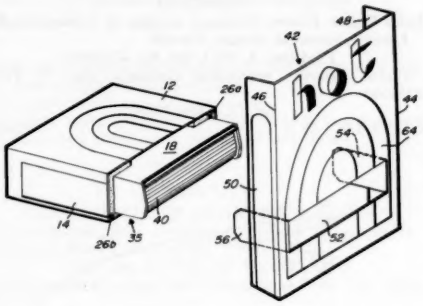
1. A doctoring apparatus for uninterrupted doctoring of material from a moving belt comprising a multiple-bladed doctor assembly rotatably mounted and provided with means for indexing said assembly by rotating said assembly in the same direction of rotation as the moving belt to provide a new blade in doctoring position, a single blade for doctoring during the indexing operation of the multiple-bladed assembly, a first pivotal means engaging said multiple-bladed doctor assembly for moving said assembly in and out of doctoring position, a second pivotal means engaging said single blade for moving

said blade in and out of doctoring position during the indexing operation of the multiple-bladed assembly and actuating and sequence timing means engaging said first and second pivotal means for controlling the sequence and timing of the operations and providing the energy for indexing and for doctoring.

3,848,735
SHIPPING AND DISPLAY CARTON ASSEMBLY FOR AN ELECTRONIC DEVICE

Paul D. McGee, Medinah, and Dalton C. Ulmer, Schaumburg, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 2, 1973, Ser. No. 320,219
Int. Cl. B65d *25/24*
U.S. Cl. 206—45.25 **7 Claims**



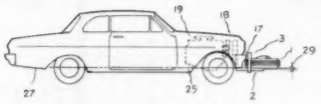
1. A shipping and display carton assembly for an electronic device, including in combination: an outer carton member having top, bottom and side walls and end flaps, said carton member being perforated at the top, bottom and side walls, along a line located a predetermined distance from a first end of said carton for removing said first end portion thereof, carton insert means being formed to receive said electronic device in surrounding fashion and being sufficiently rigid to protect said electronic device, said carton insert means being dimensioned for receipt within said outer carton member when said electronic device is received in said insert means, one end portion of said insert means being breakable for removal from the remaining portion thereof, said one end portion being substantially equal to the removable first end portion of said carton and being aligned therewith, so that upon removal of said one end portion of said carton member and the corresponding end portion of said insert means, a predetermined portion of said electronic device is exposed for display, the remaining portion of said device being held in said insert means within said outer carton portion, and display card means having an opening therethrough dimensioned for receipt of said exposed portion of said electronic device, said display card means and said packaged portion of said electronic device providing support to said display card means in a generally vertical position when said exposed portion of said electronic device is inserted through the opening.

3,848,736
TIRE BUMPER KIT

Cheston Lee Eshelman, 621 N.E. 30th Ter., Miami, Fla. 33137

Continuation-in-part of Ser. No. 88,059, Nov. 9, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 228,035
Int. Cl. B65d *79/00, 81/32, 85/00*
U.S. Cl. 206—223 **4 Claims**

1. A multiple parts kit comprising a plurality of differently shaped structural elements so formed and dimensioned that when assembled together they form a rigid platform for mounting on the forward portion of a motor vehicle to carry substantially horizontally thereon a spare wheel and tire; said kit comprising a U-shaped element having means for attaching it to the bumper of a highway vehicle in one of several vertical positions, an elongated element having means at one end for attachment to a cross frame member of the highway vehicle, a collar-like member for encircling said elongated element for

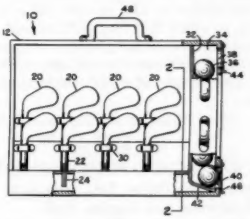


connecting it to the U-shaped element, a support member for mounting on the elongated member to carry a tire and wheel, means being provided on the elongated member to accommodate longitudinal movement therealong of the support member, a stop for mounting on the elongated member to limit said longitudinal movement, two rod-like side braces for rigidifying the assembled platform, and an assortment of nuts, bolts and washers for assembling the parts of the kit.

3,848,737
GOLF SET

Clarence Kenon, 418 S.W. 2nd Ter., Dania, Fla. 33004

Filed Jan. 19, 1973, Ser. No. 324,986
Int. Cl. A63b *53/02, 55/00, 55/02, 55/04*
U.S. Cl. 206—315 **7 Claims**



1. In a golf set having a carrying case with a hingedly mounted front side, the improvement which comprises:

a lower horizontal platform inside said case immediately behind said hinged front side, and an upper horizontal platform inside said case behind and above said lower platform, each of said platforms having a plurality of downwardly-extending openings therein;

a plurality of different golf club heads mounted on said platforms and extending upward therefrom inside the case, each of said club heads having a reduced shank portion snugly received in a respective opening in the platform on which that club head is mounted, and the club heads on the upper platform extending behind and above the club heads on the lower platform;

a golf club handle having means at its lower end for releasable attachment to said reduced shank portion of each golf club head individually;

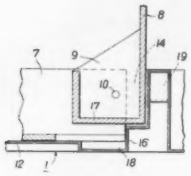
and means on the case releasably holding said golf club handle.

3,848,738

KEEPING MEANS FOR KEEPING STORAGE BOXES FOR COMPACT CASSETTES

Karl Hirsch, Klagenfurt, Austria, assignor to Firma Karl Hirsch OHG Plastikwarenerzeugung, Klagenfurt, Austria

Filed May 24, 1973, Ser. No. 363,719
Claims priority, application Austria, May 29, 1972, 4637/72
Int. Cl. A45c *11/00*
U.S. Cl. 206—387 **11 Claims**



1. Keeping means for keeping storage boxes having a body including a rear wall, and a hinged cover pivoted to said body adjacent to said rear wall and comprising a holder adapted to hold a compact cassette in said hinged cover, said hinged cover being pivotally movable relative to said body between a closed position, in which said hinged cover extends transversely to said rear wall and a compact cassette held by said holder is accommodated in said body, and an open position, in which said hinged cover extends generally parallel to said rear wall and a compact cassette held by said holder is disposed outside said body,

said keeping means comprising at least two hinged leaves, each of said leaves having at least one receptacle side, which faces another of said leaves, and is provided on said receptacle side with longitudinal and transverse walls, which define receptacles, each of which is adapted to receive the body of one of said boxes,

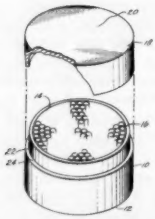
said transverse walls being provided with stops adapted to hold said bodies in said receptacles in a predetermined position in which said rear walls extend adjacent to and parallel to respective longitudinal walls and define clearance spaces therewith which are sufficiently large to enable a movement of each of said covers to said open position.

3,848,739

PACKAGING AND PURIFYING GRAPHITE

Arthur Wayne Fagan, Dallas, Tex., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 27, 1972, Ser. No. 301,446
Int. Cl. B65d *85/20*
U.S. Cl. 206—443 **7 Claims**



1. A package comprising:

a. a receptacle formed of graphite and having a central cavity and rigid, load-supporting walls with a through opening in at least one wall thereof;

b. a closure member also formed of graphite and adapted for removable attachment to said receptacle and across said through opening;

c. means to removably secure said closure member across said through opening;

d. solid form items substantially entirely filling said central cavity and consisting essentially of a plurality of slender cylindrical bodies of graphite having less than 20 parts per million of inorganic impurities and packed therein in a stacked array; and

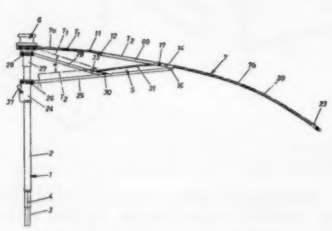
e. at least a portion of said receptacle and closure member being formed of graphite with interconnecting pores having diameters no greater than about 0.5 micron in diameter to provide permeability to gases but not to airborne particulate matter.

3,848,740

UMBRELLA

Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed Dec. 3, 1973, Ser. No. 420,908
Claims priority, application Germany, Dec. 7, 1972, 2259885
Int. Cl. A45b *19/00*
U.S. Cl. 135—25 R **7 Claims**



1. An umbrella frame having a stick, foldable dome ribs extending substantially radially from the stick, each dome rib consisting of first and second sections pivotably joined together, the first dome rib section, adjacent the stick consisting of first and second parts pivotably joined together, the first dome rib section being laterally offset from the second dome rib section where they join together.

3,848,741

ADJUSTABLE, SEALED ROLL SCREEN FOR CLASSIFYING AND CONVEYING MATERIAL-IN-PROCESS SUCH AS TACONITE PELLETS

Kenneth M. Haley; Dennis F. Koschak; Lawrence J. Molinaro, and Richard L. Reed, all of Silver Bay, Minn., assignors to Reserve Mining Company, Silver Bay, Minn.

Filed June 22, 1973, Ser. No. 372,828
Int. Cl. B07c *1/10*
U.S. Cl. 209—106 **6 Claims**

1. A roll screen, comprising:

a. a frame, including two longitudinal side members;

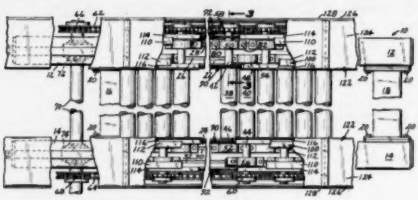
b. a plurality of spaced rollers mounted for rotation about generally parallel axes;

c. bearings for rotatably mounting said rollers on the side members;

d. means connecting said bearings to the side members for individually adjusting the positions of said rollers along the side members to provide any desired spacing between said rollers to compensate for decreased roller diameter resulting from wear of the rollers and to vary the open area of the roll screen, said connecting means including two longitudinal bearing plates, each with two parallel

T-slots therein, said bearing plates attached to the side members;

e. means for mounting said bearings on the bearing plates, said mounting means including T-nuts which move in said T-slots;



f. means for sealing said bearings and said connecting means from foreign material and dust;

g. means for driving said rollers; and

h. means for covering said driving means to guard against accidental interference with the driving means

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3,848,742

GLASS CONTAINER INSPECTION MACHINE

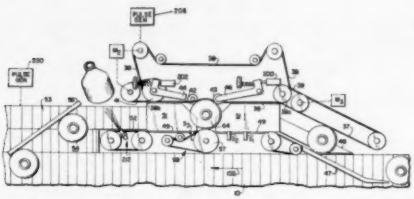
Willy Krenmayr, Jona, Switzerland, assignor to Emhart Zurich S.A., Zurich, Switzerland

Filed Jan. 2, 1973, Ser. No. 320,569

Claims priority, application Switzerland, Jan. 19, 1972, 761/72

Int. Cl. C10g *13/02*

U.S. Cl. 209—111.7 **25 Claims**



1. Container inspection apparatus for use alongside a container conveyor, and comprising:

a. a base for supporting the containers in upright position as they are moved along in a line and a rail against which the containers are adapted to be rolled as they are so moved;

b. means for diverting containers from the conveyor onto an upstream end of said base;

c. means for metering the containers so moving onto the base;

d. a continuously driven endless transport belt located at one side of said base, generally opposite said rail to roll the containers and advance them at a speed greater than that permitted by said metering means to space the containers along said base;

e. means for rotating each container on a fixed reference axis at an inspection station, said rotating means including said transport belt and means for wrapping a segment of said belt around a portion of the periphery of the container being inspected at said station; and

f. said means for so wrapping said belt being selectively movable into and out of engagement with said belt to permit at least one full revolution of the container being inspected on said reference axis.

ERRATUM

For Class 209—106 see:
Patent No. 3,848,741

3,848,743

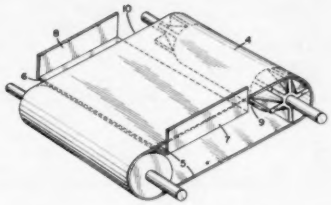
PULLEY FOR MAGNETIC SEPARATION OF SOLID WASTES

Victor Danberg, 6 Mary Ann Ln., Wallingford, Conn. 06492

Filed Dec. 13, 1971, Ser. No. 207,396

Int. Cl. B03c *1/18*

U.S. Cl. 209—218 **4 Claims**



1. A magnetic separator unit for separating magnetic material from a burden which must be scrambled and regrouped before passing on to the next of a series of magnetic separators, consisting of an endless conveyor belt passing over a head magnetic pulley and a tail pulley, said head magnetic pulley rotating about a shaft axially extending through said head magnetic pulley having a magnetic section and at least one end pulley extension, extending longitudinally and composed of non-magnetic material, said end pulley extension being fluted, having at least one open tapering groove sloping in depth in the longitudinal direction, and said end pulley extension being about one-fourth to about one-half the face length of the magnetic section of the said head pulley.

3,848,744

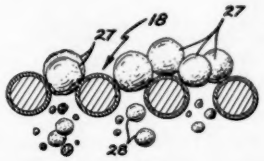
GREEN PELLET SIZING SCREEN

James H. Flaherty, 3 S.W. Third St., Grand Rapids, Minn. 55744

Filed Dec. 4, 1972, Ser. No. 311,698

Int. Cl. B07b *1/52*

U.S. Cl. 209—393 **15 Claims**



1. A pellet sizing screen of the type disposed adjacent the discharge end of a balling drum to classify magnetite type iron oxide pellets formed in the balling drum of magnetite concentrate according to size and usable in conjunction with means to impart movement to the screen, said screen comprising:

a plurality of screen rods relatively spaced apart to define openings of sufficient size to allow passage of undersize magnetite type pellets and restrict passage of magnetite type pellets equal to or greater than a preselected size;

means securing the screen rods in relative arrangement to one another;

each said screen rod having an inner core and an outer shell attached to at least a portion of the inner core;

said outer shell being of hard chromium of a thickness of at least about 0.005 inch and adapted to receive and convey magnetite type pellets discharged from the balling drum; and

said inner core being a fatigue resistant material having a modulus of elasticity lower than the material of the outer shell.

3,848,745

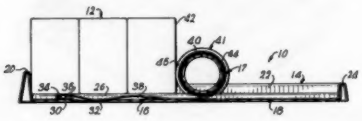
TRAY UNIT

John W. Smith, 214 W. 99th Ter., Kansas City, Mo. 64114

Filed Aug. 8, 1973, Ser. No. 386,560

Int. Cl. A47f *1/00;* **B65g** *1/16*

U.S. Cl. 211—49 D **7 Claims**



1. A merchandise vending unit having an automatic merchandise advancing means, said unit comprising:

a tray having a bottom wall adapted to support a quantity of individual merchandise items;

said tray having a front rim and being of a size and shape to retain said items in a longitudinally disposed layer extending rearwardly from said rim; and

advancing means affixed to said bottom wall and engageable with a normally rearwardmost one of said items to automatically shift the remaining ones of said items forwardly in said tray when the normally forwardmost one of said items is removed therefrom whereby the next remaining forwardmost item is adjacent said rim,

said advancing means including a roll of extensible sheet material having a memory to render the same self-winding,

said material including a stretch underlying said items when in a partially extended condition,

said advancing means presenting a rolled portion of said material rearwardly of said rearmost item when the advancing means is in engagement with the said rearmost item,

said material having an end affixed to said bottom wall proximal said forward rim of said tray whereby said items in the tray are biased in the direction of said rim by said rolled portion,

said advancing means further including a cylindrically shaped roller about which said rolled portion of material is wound, said roller being disposed transversely of said material and in contact with said rearmost item.

3,848,746

APPARATUS FOR DIVERTING A ROW OF CYLINDRICAL BODIES ALTERNATELY INTO TWO PATHS OF TRAVEL

Johannes Bernardus van der Winden, Amstelveen, Netherlands, assignor to Stork Amsterdam B.V., Amstelveen Netherlands

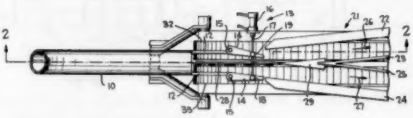
Continuation-in-part of Ser. No. 259,178, June 2, 1972, abandoned, Continuation of Ser. No. 61,600, Aug. 6, 1970, abandoned. This application Dec. 11, 1973, Ser. No. 423,822

Claims priority, application Netherlands, Aug. 8, 1969, 6912110

Int. Cl. B65g *47/26*

U.S. Cl. 198—31 AC **2 Claims**

1. Apparatus for diverting a row of cylindrical bodies advancing successively along a path of travel and alternately into two divergent paths of travel, comprising: means for forwardly advancing the bodies in an attitude lying on their respective outer cylindrical walls along the path of travel; spaced, parallel and fixed guide means located adjacent the forward end of said advancing means in the path of travel of the bodies; diverter means located at the forward end of said spaced guide means in the path of travel of the bodies and being movable transversely thereof; a pair of spaced and fixed divergent guide means located adjacent the forward end of said movable guide means and defining the two divergent paths of travel for



the bodies; a fixed, narrow upright ridge element located centrally between said fixed guide means and extending toward said divergent guide means; and movable conveyor means located beneath said pair of divergent guide means at a level below the upper edge of said ridge element, the cylindrical bodies moving along said ridge in an unstable condition after leaving said advancing means and thereafter being diverted alternately into the divergent paths of travel upon actuation of said movable diverter means which causes the bodies to move to one side or the other of said ridge element.

3,848,747

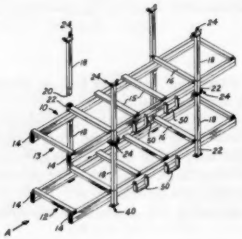
STACKING FRAME

Harry W. Thompson, Pontiac, Ill., assignor to Interlake, Inc., Chicago, Ill.

Filed Apr. 16, 1973, Ser. No. 351,365

Int. Cl. A47f *5/10;* **B65d** *19/38*

U.S. Cl. 211—177 **10 Claims**



1. A stacking component for a stacking frame installation, comprising:

a support member, and

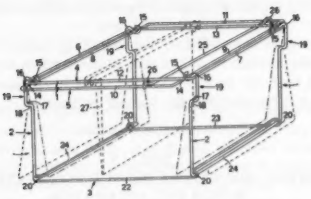
a saddle member mounted at an end of said support member, said saddle member including an elongate substantially linear supporting edge facing away from said end of said support member and a pair of projections extending from the ends of said supporting edge in substantially coplanar relationship with said supporting edge, but in angular relationship thereto, and away from said end of said support member.

3,848,748

SUPPORT OF BENT STIFF WIRE FOR SUSPENDED FILES OR THE LIKE, REMOVABLY INSERTABLE INTO A FURNITURE DRAWER

Pietro Ceccarelli, Massa, Italy, assignor to Ing. C. Olivetti & Co., S.p.A., Ivrea (Torino), Italy

Filed May 2, 1973, Ser. No. 356,557
Claims priority, application Italy, May 3, 1972, 68359/72
Int. Cl. A47f *5/10*
U.S. Cl. 211—178 R **3 Claims**



1. A support for removable insertion in furniture drawers for use with suspended files or the like, said support comprising:

a first rigid wire frame comprising two substantially rectangular elements and disposed in superposed relationship wherein one of said two elements has two opposite sides parallel to and protruding from two opposite sides of the other element at a predetermined distance therefrom;

a second rigid wire frame disposed below said first frame during use and having a substantially rectangular configuration and having two hooked portions at each end portion of two opposite sides thereof; and

a pair of rigid wire substantially U-shaped side members for mutually interconnecting said first and said second frames during use, said side members comprising means disposed on the closed end portion of each side member for engaging with one of said hooked portions and means disposed at the open end portion of each side member for engaging with said first wire frame to rotatably mount each side member on one of said two opposite sides of said one of said two elements for movement through substantially **270°** and to hold each side member in a substantially right angle position with reference to said first wire frame.

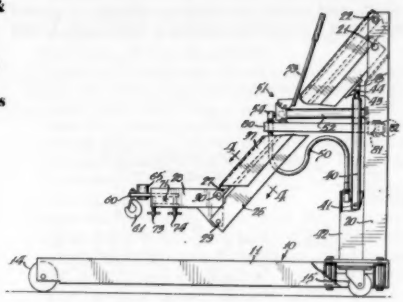
3,848,749

COMBINATION CRANE AND JACK UNIT

Richard T. Anderson, and Michael J. Sethney, both of Owatonna, Minn., assignors to Owatonna Tool Company, Owatonna, Minn.

Filed Nov. 5, 1973, Ser. No. 412,588
Int. Cl. B66c *23/00*
U.S. Cl. 212—8 R **7 Claims**

1. A combination crane and jack unit including a base having a plurality of floor-engaging wheels, a mast extending upwardly from said base, a parallelogram structure including a pair of parallel arms pivotally mounted at one of their ends and one above the other to the upper end of said mast, a generally horizontal support pivotally connected to the opposite ends of the arms, means for raising and lowering said arms to raise and lower said support, with said arms having a lower position extending at an angle of approximately **45°** to the mast to place said support just above said base, a first means on said support for holding a supporting chain or the like for a depending article when the unit is to function as a crane, second means on said support for holding a fixture to engage under an article when the unit is to function as a jack, said parallel arms lying one above the other, and shield means depending from the upper one of said arms and overlapping



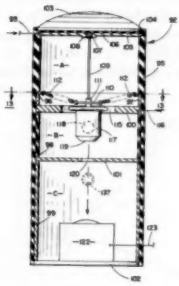
the lower one of said arms to prevent positioning of an operator's fingers between said arms.

3,848,750

CRANE TIP ALARM

Daniel W. Hoge, 1529 Lynton St., Wilmington, Calif. 90744

Filed Feb. 9, 1973, Ser. No. 331,218
Int. Cl. B66c *23/84*; **G08c** *21/00*
U.S. Cl. 212—69 **9 Claims**



1. A device for indicating tilting of a structure on which it is mounted, said device comprising photoelectric emitting means suspended by a pendulum swingable over an annular area above vertically aligned photoelectric receiving means electrically connected to a first signaling device, said pendulum also carrying an annular electrical conducting element spacedly disposed within a larger surrounding annular electrical conducting element, contiguity between the two annular elements serving to make a circuit to a second tilt signaling device, whereby the two tilt signaling devices indicate progressive amounts of tilt of said structure.

3,848,751

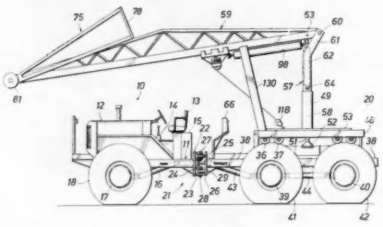
SIDE BOOM PIPE LAYING MACHINE

John G. Holland, Sr., 648 Rocky River, Houston, Tex. 77027

Filed Jan. 16, 1973, Ser. No. 324,194
Int. Cl. B66c *23/78*
U.S. Cl. 212—145 **11 Claims**

1. Apparatus for use in off-the-road hoisting operations, comprising: a vehicle unit having ground engaging means; an

upright mast on said unit; boom means having one end pivotably attached to the said mast; hoist means movable longitudinally along said boom means and adapted for handling a load; support means pivotally attached to the other end of said boom means, said support means being adapted for pivotal rotation between a supporting position at right angles to said



boom means where the lower end of said support means rests on the ground and provides vertical support, and a traveling position substantially parallel to and above said boom means; and selectively operable motor means for pivotally rotating said support means between said supporting position and said traveling position.

3,848,752

APPARATUS FOR TRANSFERRING SHEET MATERIAL

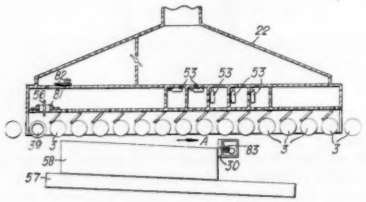
Geoffrey Hindle Branch, Golborne, Near Warrington, Lancashire, and James Edward Hall, Billinge, Near Wigan, Lancashire, both of England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England

Filed Sept. 17, 1970, Ser. No. 73,032

Claims priority, application Great Britain, Sept. 19, 1969, 46409/69

Int. Cl. B66c *1/02*

U.S. Cl. 214—1 BS **17 Claims**



1. Apparatus for transferring sheets of glass across an open space defining a transfer path from a first location to a to a second location comprising:

suction means mounted above the transfer path and extending between those locations;

a series of driven rollers mounted in the suction means at a level to project below the bottom of the suction means and each extending transversely of the transfer path, the extent of which projection is such that when a sheet is drawn by suction against the driven rollers the gap between the upper face of the sheet and the bottom of the suction means constitutes an air flow restrictor which creates reduced pressure over the sheet to suctionally hold the sheet against the rollers;

air flow restriction means in the suction means to restrict the flow of air drawn between said driven rollers in the absence of a sheet;

said suction means comprising a suction hood in the bottom of which said series of driven rollers are housed, the hood having an open bottom through which the driven rollers project;

division means in the hood defining a separate release chamber adjacent the second location;

suction control means operable to cut off the suction when a sheet has been transferred to a required second location so that the sheet drops away from the drive elements at that location;

actuating means arranged to be actuated by movement of a sheet to the second location; and

valve means controlled by the actuating means for cutting off the suction in only a part of the suction hood associated with the second location so as to release the sheet when it has reached the second location.

3,848,753

TURNING MOVEMENT DEVICE FOR MATERIAL HANDLING APPARATUS

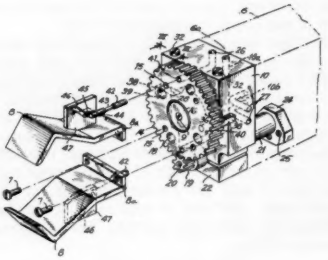
Sven Christer Borg, Handen; Christer Ragnar Hesson, Johanneshov, and Erik Henning Nilsson, Trangsund, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Sept. 6, 1972, Ser. No. 286,714

Claims priority, application Sweden, Apr. 14, 1972, 4849/72

Int. Cl. F16d *71/04*

U.S. Cl. 214—1 B **5 Claims**



1. A turning movement device for a gripper of a material handling apparatus for angular movement of an article forwards and backwards through a predetermined angle comprising:

a. a block element which is removably secured to the material handling apparatus,

b. an attachment member for the gripper being pivotally supported on the element and movable through said predetermined angle,

c. a driving motor for the attachment member,

d. adjustable damping means for damping the movement of the attachment member in the two end positions of its turning movement,

e. a driving medium for said driving motor and gripper, and

f. said block being provided with passageways for flow of said driving medium to said gripper and driving motor, said material handling apparatus having a corresponding passageway, and at least one of the passageways in said block being automatically connected to the corresponding passageway when the block is fixed to said material handling apparatus.

3,848,754

SIDE LOADING FORK UNIT FOR LIFT TRUCKS

Anders Ivar Bryntse, Mjolby, Sweden, assignor to AB BYGG-OCH Transportekonomi (BT), Mjolby, Sweden

Filed June 26, 1973, Ser. No. 373,898
Claims priority, application Sweden, July 11, 1972, 9115/72
Int. Cl. B65g *25/00*
U.S. Cl. 214—1 BB **2 Claims**

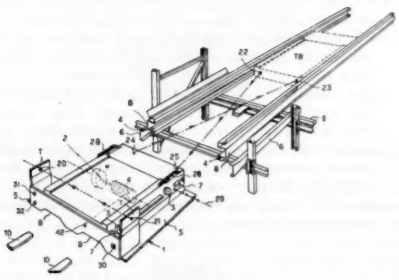
1. A side loading fork unit for lift trucks, comprising a body and forks and intermediate guides mounted for lateral movement relative to said body, a hydraulic cylinder mounted for movement on said body in the same direction as said forks and intermediate guides, said cylinder having teeth thereon that engage with a gear wheel mounted on said body for rotation about a stationary axis, said gear wheel being fixedly connected to another gear or chain wheel in engagement with a rack or chain, respectively, on said intermediate guide, and a chain or cable secured to and interconnecting the left ends of said cylinder and fork and extending over a roller on the right end of said intermediate guide and another chain or cable secured to and interconnecting the right ends of said cylinder and fork and extending over a roller on the left end of said intermediate guide.

3,848,755

ELECTRO-MECHANICAL LOAD TRANSFER DEVICE FOR DYNAMIC STORAGE

Christian Bussienne, 4 Av. Se Pa Rivette, 27600 Louviers, and Dominique Mary, "La Jouche", Elbeuf-76, both of France

Filed Dec. 29, 1972, Ser. No. 319,477
Claims priority, application France, Jan. 12, 1972, 72.00899
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A **8 Claims**



1. A dynamic storage installation having at least one storage level comprising:

a structure forming a plurality of juxtaposed storage gangways fitted with two load supporting rails,

an entrance gangway and an exit gangway placed perpendicularly to said storgage gangways at their ends,

at least one flat trolley movable on said rails, said trolley having a vertically movable load bearing surface which assumes an up position relative to said load supporting rails in which it transports the load relative to said storage gangway, and a down position relative to said load supporting rails in which it deposits a load on said rails and freely moves below said load, said trolley being equipped with electrical control components capable of ensuring automatic control of its movements for effecting loading, unloading and assembly of loads toward the gangway exit, a single flat trolley as said entrance gangway and a single flat trolley at the exit gangway,

a loader with which each of said trolleys co-operate

means for introducing said loader into a selected gangway, each loader comprising a support element and components for centering said loader and trolley relative to said storage gangway, a portion of said support element cooperating with slide bars with which each storage gangway is fitted at its ends,

an electric cable,

a drum and winder means, said cable and drum and winder means being mounted on each trolley, said loader being connected to the corresponding flat trolley by said electric cable wound on said drum and winder means, said cable being laid down or taken up along said storage gangway as said trolley moves therealong, and

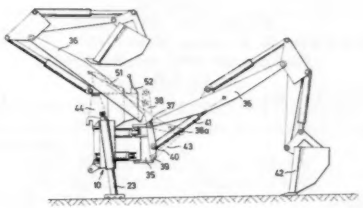
a female plug and power cable mounted on said structure at the end of each storage gangway, said loader further comprising a plug which engages automatically with said female plug and power cable so as to provide an electricity supply to the electrical control components of said trolley.

3,848,756

BACKHOE APPARATUS

Hans Schaeff, Wurtt, 7183 Langenburt, Germany

Division of Ser. No. 125,618, March 18, 1971, abandoned. This application Mar. 2, 1973, Ser. No. 337,558
Int. Cl. B66f *9/00*
U.S. Cl. 214—138 C **8 Claims**



1. In a backhoe apparatus including a frame, a backhoe boom, a shovel means associated with said boom, a column means at one end of said boom, and an operating arm pivotally connected with said frame for movement about a vertical pivot axis, said operating arm also being swingably connected with said column, whereby said arm is swingable relative to said frame and said column is swingable relative to said arm, the improvement comprising: a first means for laterally swinging said operating arm continuously and under load conditions through an arc of at least 45° to each side of a central position, said first means including a first hydraulic cylinder, one end of which is connected to said frame the other end of which is connected to said arm; and second means for laterally swinging said column independently of the lateral swinging of said operating arm, said second means including a second hydraulic cylinder one end of which is connected to said arm the other end of which is connected to said column, said second means effecting lateral swinging of said boom through an arc of at least 45° to each side of the longitudinal axis of the operating arm, whereby the boom and shovel means are effectively swingable through at least 180°.

3,848,757

SORTING AND STACKING OF FOOD SLICES

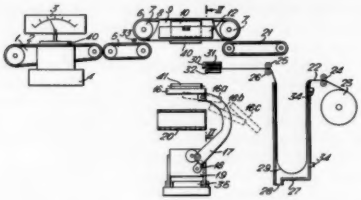
Ingo Jordan, Hamburg, Germany, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 242,651, April 10, 1972, abandoned. This application Sept. 18, 1973, Ser. No. 398,516

Claims priority, application Germany, Apr. 13, 1971, 2117839

Int. Cl. B66c *17/06*

U.S. Cl. 214—152 **4 Claims**



1. A method of forming stacks of flexible food slices comprising feeding a series of flexible food slices in turn to the underside of a moving air permeable conveyor, attaching each slice in turn to the underside of the conveyor by vacuum, conveying each attached slice to a position over a stacking support, stopping said conveyor with said slice at said position, releasing the vacuum and forcibly releasing said slice to allow it to fall from the conveyor and form a stack on said stacking support, and when the stack contains the desired number of slices the said stacking support then being moved downwardly and outwardly from under the stack to allow said stack to fall on a moving conveyor for conveyance away.

3,848,758

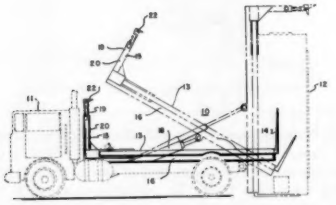
HYDRAULIC TRUCK BED

Jack N. Carter, Rt. 4, Nampa, Idaho 83651

Filed Aug. 30, 1973, Ser. No. 389,937

Int. Cl. B60p *1/16*

U.S. Cl. 214—501 **1 Claim**



1. In a truck bed having a pallet which is supported by a pair of parallelly, rectilinearly disposed main beams, which is provided with means for pivotally mounting said pallet over the rearwardmost terminal end of a truck chassis, and which is provided with means for selectively raising and lowering said pallet into a substantially vertical position and a plurality of loading forks which are substantially perpendicularly mounted at the rearwardmost terminal end of said pallet, a movable headboard which is disposed transversely at the forward portion of said pallet, comprising:

a pair of upstanding cornerposts mounted on suitable rollers which ride along said rectilinear main beams and including a container containing lip comprising an inverted L-shaped member disposed with its inside vertex rearwardly with respect to said truck bed, said L-shaped member being pivotally mounted to the terminal ends of said cornerposts;

a head plate fastened between said cornerposts;

a headboard actuator sub-assembly including a pair of actuator means which are mounted along said main beams of said pallet for selectively moving said headboard with respect to said pallet.

3,848,759

INDUSTRIAL LIFT TRUCKS

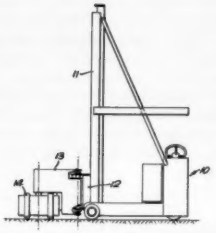
Cecil Goodacre, and Peter Alfred Leggett, both of Basingstoke, England, assignors to Lansing Bagnall Limited, Basingstoke, England

Filed May 4, 1973, Ser. No. 357,384

Claims priority, application Great Britain, May 8, 1972, 21442/72

Int. Cl. B66f *9/14*

U.S. Cl. 214—730 **7 Claims**



1. An industrial lift truck comprising a mast structure mounted on the truck:

a load lifting carriage which is movable up and down the mast structure;

a turret head mounted on said load lifting carriage for sideways movement relatively thereto;

a load supporting structure mounted on said turret head for rotation relatively thereto about an upright axis;

two spaced apart horizontally opposed toothed racks which are fixedly mounted on one end of said load lifting carriage and extend across the width thereof;

a gear assembly mounted on said turret head and including two gear wheels in mesh with each other which are mounted on said turret head for rotation about parallel upright axes, one of the gear wheels being in mesh with one of said two racks and the other gear wheel being in mesh with the other of said two racks; and

means for driving said one gear wheel so as to move said turret head sideways.

3,848,760

PACKING CONTAINER

Hans Anders Rausing, Lund, Sweden, assignor to Sobrefina SA, Fribourg, Switzerland

Filed Dec. 8, 1972, Ser. No. 313,413

Claims priority, application Sweden, Dec. 30, 1971, 16883/71

Int. Cl. B65d *11/16*

U.S. Cl. 215—12 **4 Claims**

1. A packaging container comprising a plastic element having a substantially concave bottom portion, a cylindrical wall portion above said bottom portion and a conical top portion above the cylindrical wall portion, said bottom portion, wall portion and top portion being integrally formed, the

bottom edge of the conical top portion having a greater diameter than the diameter of the top of the cylindrical wall portion and extending therebelow, and a sleeve member of substantially rigid cardboard-like material surrounding said cylindrical portion for supporting said cylindrical portion and maintaining the shape thereof and extending downwardly at least as far as the lowest portion of the concave bottom portion to serve as a base for the container, an integral flange-like annular portion extending from the top circumference of the cylindrical portion outwardly and downwardly to the lower circumferential edge of the conical top portion, the radial width of said flange-like annular portion being greater than the thickness of said sleeve member and the upper edge of said sleeve member engaging the lower surface of said flange-like annular portion to protect the sleeve from deterioration by any liquid which may contact the upper edge of said sleeve member when the contents of said container are poured therefrom.

3,848,761

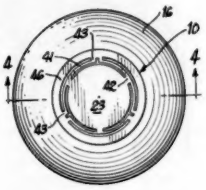
CHILD-PROOF CLOSURES

Sidney M. Libit, 441 Lakeside Ter., Glencoe, Ill. 60022

Filed June 22, 1973, Ser. No. 372,816

Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*

U.S. Cl. 215—220 **5 Claims**



1. In combination, a container having a screw-threaded neck and a closure for said neck, said closure comprising an inner sleeve having an internal screw thread engageable with said neck thread for attachment and removal of the closure, an outer sleeve exteriorly of said inner sleeve, concentric with, spaced therefrom and connected thereto for joint rotation of both sleeves, said outer sleeve having at least one internal projection and said container having at least one external projection selectively abuttable with said outer sleeve projection when the closure is rotated on the neck to open condition, said projections having respective configurations allowing non-abutting rotation of the outer sleeve relative to the container only when the closure is rotated to closed condition, the means connecting said two sleeves adapted to permit axial movement of the outer sleeve to disengage the projections, the improvement in which said joining means comprises a plurality of resiliently deformable, elongated straps located in the annular zone defined between the two sleeves, one end of each strap being joined to the outer sleeve and the other end to the inner sleeve, the principal plane of each strap being perpendicular to the common axis of the sleeves in the normal condition of the sleeves, and displaceable out of said perpendicular position upon relative axial displacement of the sleeves, each strap being arcuate between its respective junctions with the sleeves.

3,848,762

CONTAINER - SNAP-ON CLOSURE ASSEMBLY

Ralph H. Thomas, Clark, N.J., assignor to Bristol-Meyer Company, New York, N.Y.

Filed June 18, 1973, Ser. No. 370,767

Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*

U.S. Cl. 215—224 **7 Claims**

1. A container adapted to receive a snap-on closure comprising a neck portion, terminating in a container opening, and a rounded annular bead; a plastic ring adapted to snap into engagement with said rounded annular bead, said plastic ring being provided with means for receiving said snap-on closure and a flat flange extending outwardly from said neck portion whereby a substantially flat abutting surface is provided which may serve as an abutting surface for the lower margin of said snap-on closure.

3,848,763

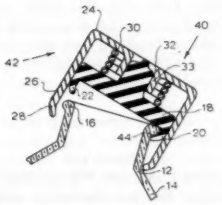
DUAL MOTION CHILD RESISTANT CLOSURE

Willis A. Kropp, Deland, Fla., assignor to Alexander C. Hunt, Orlando, Fla.

Filed Feb. 12, 1973, Ser. No. 331,765

Int. Cl. B65d *85/56, 55/02;* **A61j** *1/00*

U.S. Cl. 215—225 **18 Claims**



1. A closure adapted to be secured on a neck of a container of the type having a lip surrounding at least a portion of the periphery of said neck, said closure comprising:

a cap member adapted to fit over said neck and having a flexible side wall adapted to engage said lip;

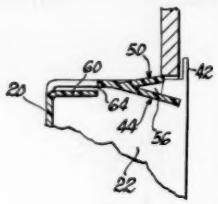
means for limiting the expansion of said flexible side wall and

means for providing resiliency between said cap member and said expansion limiting means.

3,848,764
ELECTRICAL BOX STRUCTURE FOR SECUREMENT TO WALL PANELING WITHOUT SEPARATE FASTENERS

George Salg, River Forest, Ill., assignor to Reflect-O-Lite Manufacturing Company, Chicago, Ill.

Filed Aug. 25, 1972, Ser. No. 283,850
Int. Cl. H02g 3/08
U.S. Cl. 220—3.6 13 Claims



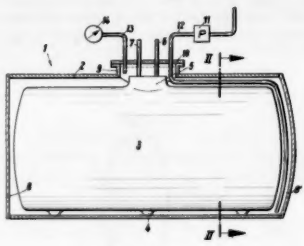
1. A plastic molded electrical box assembly secured without fasteners to a wall panel and supported in an opening defined by said panel, said box assembly comprising a plurality of sidewall segments each extending forwardly of said back wall to collectively define, with said back wall, an open hollow box assembly defining an open front spaced from said back wall, said sidewall being substantially the same shape and size, in front elevation, as said panel opening, and integral wall panel securing means comprising stop members extending outwardly of said sidewall segments for limiting entry of said box assembly through said wall panel opening from the front and for engaging the front surface of said wall panel when the box assembly is secured to said panel, and outwardly extending locking elements integral with the sidewall segments of said box assembly and located a given fixed distance rearwardly of said stop members for engaging the back surface of said wall panel when the box assembly is supported in said opening, said locking elements each comprising an upwardly sloping cam segment having one end merging in the sidewall segment and an opposite exposed end disposed entirely outwardly of the respective sidewall segment, whereby said locking elements are proportioned to be deflected inwardly when said box assembly is pushed inwardly through said opening and then resiliently to move outwardly when said stop members have engaged the front surface of said wall panel, said locking elements being proportioned to prevent removal of said box assembly forwardly of said opening, and to prevent removal of said box assembly from said wall panel, and a plurality of knock-outs formed with said box assembly along weakened lines of connection to facilitate their easy separation, thereby to provide access for electrical conductors to the interior from the exterior of said box assembly.

3,848,765
TANK FOR FUEL OIL OR OTHER LIQUIDS

Hermann Dürkop, Bremen, Germany, assignor to Forval-Verkaufsgesellschaft H. Dürkop & Co., Bremen, Germany

Filed June 17, 1971, Ser. No. 154,052
Int. Cl. B65d 25/18, 25/24, 51/18
U.S. Cl. 220—9 A 8 Claims

1. A container assembly comprising an inner and an outer tank adapted for under ground large capacity storage of fuel oil and other liquids, said outer tank being formed as a cylindrical tube made substantially entirely of asbestos-cement of a thickness to be self supporting of its own weight and the weight of the inner tank, said tube including ends, at least one end being closed and sealed by a lid, said lid including two plates of asbestos-cement secured together in face to face relation and having asbestos fibers in each plate oriented at

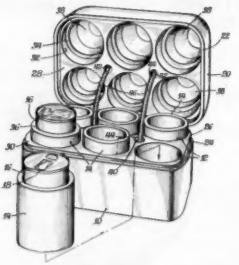


substantially ninety degrees relative to the fibers of the other plate.

3,848,766
INSULATED CONTAINER PACK

David Lawrence Gantt; Dan Frederick Stone, both of Kettering, and Timothy Joseph Townsend, Springboro, all of Ohio, said Gantt and Townsend assignors to Triance Enterprises, Inc., Dayton, Ohio

Filed June 29, 1972, Ser. No. 267,635
Int. Cl. B65d 25/18
U.S. Cl. 220—9 F 5 Claims

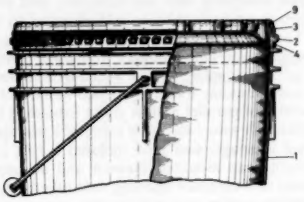


1. A food and/or beverage pack for holding food or drink containers comprising a block of low thermal conductivity material, said block having a plurality of cavities therein, said cavities being upwardly-open through the upper surface of said block and being adapted to seat cups therein, cups for holding said containers made of low thermal conductivity material seated upwardly-open in each said cavity, the height of said cups being such that a cup holding a container may be picked up with the container in the cup and the container will continue to be insulated from the hand and the atmosphere, said cups constructed for seating and exposing containers so that human lips may engage their rims without engaging the cups, and a lid having downwardly directed cavities matching those in said block and being directed through the bottom of the underside of said lid, said lid cavities being capable of receiving the tops of said containers and cups and having shoulders seatable on the rims of said cups when said cups are seated in the matching block cavities, said underside surface of said lid seating essentially flush on the upper surface of said block so that said matching block and lid cavities form independent thermal cavities.

3,848,767
CONTAINER WITH LID

Willy B. Naf, Waltenschwil, Switzerland, assignor to Koninklijke Emballage Industrie Van Leer B.V., Netherlands

Filed Jan. 11, 1973, Ser. No. 322,845
Claims priority, application Switzerland, Jan. 11, 1972, 00403/72
Int. Cl. A47j 27/08; B65d 45/00
U.S. Cl. 220—59 5 Claims

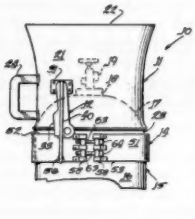


1. A container with lid, which are both made of synthetic material, which lid extends with a reversed, channel-shaped edge over the upper edge of the container which is open at the top, and is attached to the outer wall of the container with the outer leg of the reversed channel-shaped edge, characterized in that said outer leg is provided with a number of peripheral openings which fit over a number of radially extending projections of the upper edge of the container, in which embodiment said outer leg is radially confined by a thickened portion, ridge or similar projecting part on each projection and axially by the projections themselves.

3,848,768
COMBINATION PROTECTIVE CAP AND STAND FOR A PRESSURIZED GAS CYLINDER

Richard J. Griffin, 2007 Garfield, Granite City, Ill. 62040

Filed Dec. 7, 1973, Ser. No. 422,519
Int. Cl. B65d 25/00
U.S. Cl. 220—85 P 5 Claims



1. A protective cap intended for use with a pressurized gas cylinder having an elongated cylinder body member and semispherical top and bottom end surfaces, the top surface having a boss provided centrally thereof with a valve assembly received therein and projecting axially therefrom, the cap intended to protect the valve assembly from damage and abuse, the protective cap comprising:

a cap of an elongated hollow cylindrical configuration having a closed top edge, an open bottom edge, and longitudinally concave shaped side wall surfaces interconnecting said top and bottom edges, said bottom edge being of a diameter greater than the diameter of the central portion of said cap and being of a lesser diameter than the diameter of said cylinder and defining a contoured skirting about the cap adapted to seat on the circumference of the semispherical curved top end surface of the cylinder;

a plurality of latch means spaced circumferally about the side wall of said cap and pivotally mounted thereto for rotation relative thereto, each latch means including a lever arm having one end pivotally attached to said side wall surface with the opposite end projecting therefrom and each having a top end of a hook member pivotally mounted thereto in a position radially outwardly from and vertically above the pivot axis;

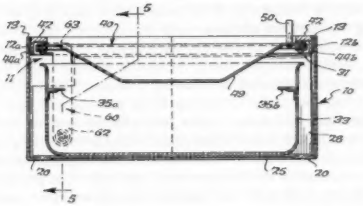
latch retaining means formed integrally with said lever arm and adapted to detachably attach said lever arm to a portion of said hook member;

a collar ring having a circumference adapted to fit snugly about the top circumferal end of said cylinder, means for detachably attaching said collar ring to said cylinder, said collar ring having a top edge, a bottom edge, and confronting end edges, and a plurality of angularly spaced apart projections defined in said bottom edge and projecting outwardly therefrom to define a cavity like recess therebehind of a size and configuration adapted to detachably receive a hook portion of said hook member therein for detachably retaining said cap to said collar ring in a position resting on said cylinder top end surface in a manner surrounding and protecting said valve assembly.

3,848,769
HINGE ASSEMBLY FOR RECEPTACLES AND THE LIKE

Valentin E. Beil, Eden, N.Y., assignor to McDonald Products Corporation, Buffalo, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,816
Int. Cl. B65d 43/16; A24b 19/04
U.S. Cl. 220—259 15 Claims



1. In an ash receptacle having an opening and including a cover member having a peripheral configuration generally conforming to the shape of said opening and being supported by said receptacle within said opening in a position closing said opening, hinge means connecting said cover member to said receptacle and located within said receptacle so as to be concealed from view when said cover member closes said receptacle opening, said hinge means comprising:

a. link means pivotally connected adjacent one end thereof to said cover member;

b. connecting means fixed within said receptacle;

c. said link means being movably connected adjacent the other end thereof to said connecting means, the connection of said link means to said connecting means being spaced from the connection of said link means to said cover member in a direction within said receptacle and away from said opening;

d. the pivotal connection of said link means to said cover member moving first away from and then toward a surface of said receptacle adjacent the connection as said cover member is pivoted about the connection to said link means through an angle of about ninety degrees so as to be moved to a position opening said receptacle;

e. said receptacle having an inner surface portion adjacent said opening and said cover member having an outer surface portion and a peripheral surface meeting in an

edge, said cover peripheral surface portion being disposed substantially parallel to and being positioned relatively close to said inner surface portion of said receptacle, said cover member edge moving along said inner surface portion of said receptacle in a direction away from said opening when said cover member is moved to an open position; and

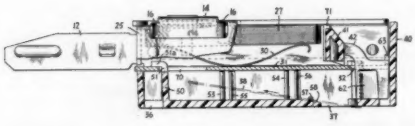
f. the pivotal connection of said link means to said cover member being located inwardly of the plane of said receptacle opening when said cover member closes said opening and remaining substantially inwardly of the plane of said receptacle opening when said cover member is moved to an open position.

3,848,770

BLADE DISPENSER WITH USED BLADE VAULT

Clemens A. Iten, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed July 27, 1972, Ser. No. 275,704
Int. Cl. B65d *35/22*
U.S. Cl. 221—102 **8 Claims**



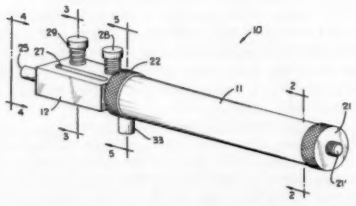
1. A blade dispenser having an elongated body for new blades and a vault member for used blades, said body member having top, bottom and side walls and an open rear end, said bottom wall having an opening therein near the front end; said vault member being of plastic molded as a single unitary piece of continuous material and having a forward upstanding lug with a top forwardly extending hook portion and said vault member further having at the rear end an upstanding nose portion; in assembled relation of the members said lug projecting through said bottom wall with the hook engaged forwardly over a section of said bottom wall and said nose portion extending into said open rear end of the body member; and said members having interlocking elements normally preventing relative axial displacement.

3,848,771

BALL BEARING FEEDER

George E. Shreev, Union City, Ind., assignor to Gene B. Symmonds, Indianapolis, Ind.

Filed May 14, 1973, Ser. No. 359,788
Int. Cl. B65h *3/32*
U.S. Cl. 221—105 **2 Claims**



1. A hand held ball bearing feeder comprising:
a rigid block including a chamber with an entrance opening and an exit opening through which a plurality of ball bearings may pass, said chamber is sized to allow a predetermined fixed number of ball bearings to be within said chamber in a single row, said block also including an external slot opening into said chamber and extending at least partially from said entrance opening to said exit opening and being sized to prevent said ball bearings from passing through said slot;

first and second plungers slidably mounted to said block adjacent respectively said entrance opening and said exit opening and extending into said chamber, said plungers including springs normally biasing said plungers to block said chamber but yieldable when said plungers are depressed to allow movement of said plungers from said chamber, said plungers are spaced apart a fixed unchangeable distance;

a rigid tube rotatably mounted to said block and including a plurality of parallel hollow stems extending lengthwise therethrough with each stem forming a passage containing ball bearings, said tube includes a first end with a removable cap mounted thereon and an opposite end adjacent said entrance opening, said tube being rotatable to position a stem in line with said entrance opening;

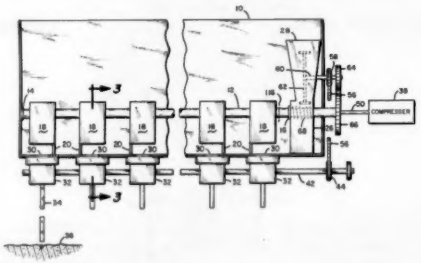
detent means mounted on said block and operable to normally hold said rigid tube in place and keeping one of said stems aligned with said entrance opening but yieldable to allow rotation of said tube and alignment of another stem with said entrance opening.

3,848,772

SEED AND SOIL TREATMENT DEVICE

Robert D. Aanestad, Burnsville; Melvin J. Straub, Minnetonka, and Edward J. Norgard, Plymouth, all of Minn., assignors to Robert D. Aanestad, Plymouth, Minn.

Filed Apr. 1, 1974, Ser. No. 456,524
Int. Cl. A01c *7/06*
U.S. Cl. 222—145 **8 Claims**



1. A seed and soil treater mounted on an implement having a frame, a seed box mounted on said frame and having at least one opening in the bottom thereof, a seed receiver mounted under and immediately adjacent said opening and in operative relationship thereto, a conduit attached to said seed receiver for receiving seeds therefrom and depositing them in the ground and ground support wheels attached to said frame, said seed and soil treater comprising:

a. a source of treatment material attached to said frame,

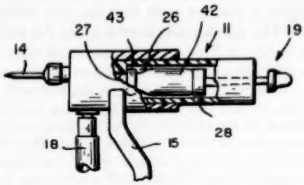
b. a dispersion cup mounted in said seed box immediately above said opening at a distance therefrom to allow seeds in said seed box to enter said seed receiver, and

c. means coupling said source of treatment material and said dispersion cup for conveying said treatment material to said dispersion cup.

3,848,773
RADIOACTIVE GAS DISPENSING DEVICE

Norman Adler, Arlington; John L. Morgenthau, Jr., Auburndale, and Paul A. Gold, West Medford, all of Mass., assignors to New England Nuclear Corp., Boston, Mass.

Filed Mar. 7, 1972, Ser. No. 232,576
Int. Cl. B67b 7/24
U.S. Cl. 222—1 16 Claims



1. A device for dispensing a pre-measured amount of a stored radioactive gas contained in a sealed vial having a pierceable septum, said device comprising

dispenser means having a gas dispensing adapter for dispensing said gas from said device and a displacement gas intake adapter;

first needle means mounted in said dispenser means and connected to said displacement gas intake adapter;

second needle means mounted in said dispenser means and connected to said gas dispensing adapter;

displacement gas injection means, including a source of displacement gas, connected to said displacement gas intake adapter;

gas dispensing means connected to said gas dispensing adapter

means for holding said sealed vial, said vial holding means being adapted to be releasably connected to said dispenser means so that the pierceable septum of said vial is positioned therein opposite said first and second needle means;

means for relatively moving said vial and said first and second needle means within said dispenser means so that said vial comes into contact with said first and second needle means to pierce said septum, said first and second needle means thereupon extending into the gas filled interior of said vial to provide communication between the interior of said vial and said gas dispensing adapter through said second needle means and between the interior of said vial and said source of displacement gas through said first needle means;

whereby, displacement gas may be injected into said vial from said displacement gas injection means and upon injection of said displacement gas, a pre-measured amount of said stored radioactive gas is dispensed from the vial and device through said gas dispensing adapter and said gas dispensing means

one way valve means for preventing substantial flow of said premeasured amount of radioactive gas from said vial to said source of displacement gas but permitting flow of said displacement gas to said vial from said displacement gas source.

3,848,774
MEASURING AND DISPENSING CAP

Lloyd J. Schimke, Box 1272 Hwy. 2, East Minot, N. Dak. 58701

Filed Jan. 24, 1973, Ser. No. 326,190
Int. Cl. G01f 11/38
U.S. Cl. 222—36 7 Claims

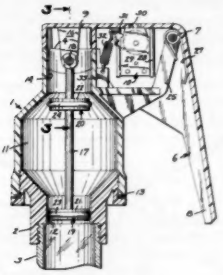
1. A cap for measuring and dispensing predetermined amounts of liquid from a container, comprising:

a. a body defining a measuring chamber of predetermined volume, the chamber having a cylindrical outlet located at the top of said body;

b. means for adapting and connecting the bottom of said body to an opening in the liquid container, said adapting and connecting means defining a cylindrical inlet which is in communication with the measuring chamber and the container opening aligned with the outlet;

c. a shaft having top and bottom ends;

d. inlet and outlet valve discs fixedly mounted on said shaft, each being movable in a sealing relationship within the cylindrical inlet and outlet, repectively, for opening and closing the inlet and outlet, the outlet valve mounted toward the top end of said shaft and the inlet valve mounted toward the bottom end of said shaft;



e. a single acting handle rotatably mounted on said body, the handle having upper and lower ends;

f. means for pivotally connecting the upper end of said handle to the upper end of said shaft to urge said shaft in a direction away from the liquid container when said handle lower end is moved toward said body;

g. means for biasing the lower end of said handle away from said body, in which position said inlet is closed by said inlet valve and said outlet is open, and when said handle is moved toward said body, said inlet is opened and said outlet is closed by said outlet valve;

h. first and second pouring spouts located at the top of said body and in communication with the outlet, the spouts being located opposite each other and each spout spaced about 90° from said handle.

3,848,775
VALVE STRUCTURE FOR PRESSURIZED LIQUID DISPENSER

Clarence R. Possell, San Diego, Calif., assignor to C-H Products Corporation, Rialto, Calif.

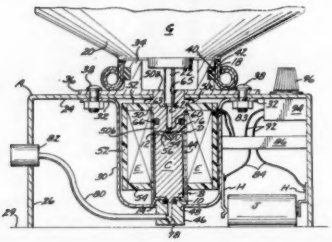
Filed Aug. 27, 1973, Ser. No. 391,637
Int. Cl. G04c 23/38
U.S. Cl. 222—70 3 Claims

1. In a dispenser that automatically discharges metered quantities of a pressurized liquid from a container at timed intervals, said dispenser of the type that includes a body assembly that defines an elongate vertical liquid metering chamber having first and second ends, an elongate armature of less length than said metering chamber movably disposed in the latter, said armature formed from a magnetically attractable material and having first and second ends, said armature of less transverse cross section than that of said metering chamber, a spray nozzle, first passage means in communication with said spray nozzle, a solenoid surrounding at least a portion of said metering chamber, a source of electric power, second passage means that maintain communication between the interior of said container and a tubular valve seat that extends into said metering chamber from said second end thereof, a normally open electric circuit means connected to said sole-

noid and said source of power that periodically close to momentarily energize said solenoid to move said armature from a first to a second position, first valve means on said second end of said armature that seal with said tubular valve seat when said armature is in said second position, an improved valve structure for maintaining said liquid in said metering chamber when said armature is in said first position, said valve structure including:

a. a tapered rigid element of circular transverse cross section that projects outwardly from the center of said first end of said armature;

b. a resilient first ring snuggly and sealingly disposed in a recess formed in said first end of said metering chamber, said first ring having a centrally disposed opening therein coaxially aligned with said element, said recess in communication with said first passage means, with said element when said armature is in said first position extending into said opening to pressure seal with said ring and exert an outward radially directed force thereon to maintain said first ring in sealing engagement with said recess, and



said element when said solenoid is energized moving out of said opening as said armature moves to said second position to permit said liquid to discharge from said metering chamber through said first passage means due to the pressure on said liquid, said armature when said solenoid ceases to be energized returning to said first position due to the weight of said armature and the action of pressurized liquid on said armature as said liquid discharges into said metering chamber from said tubular valve seat, said first ring formed from a resilient material that is inert to said pressurized liquid said second end of said armature including said valve means having a greater area than the portion of said first end and element exposed to said pressurized liquid when said element is in said first position, with said armature due to the differential in areas on opposite ends thereof exposed to said pressurized liquid at all times tending to remain in said first position to seal with said first ring, and said armature only moving from said first position when said solenoid is energized to create a magnetic field.

3,848,776

DISPOSABLE RESERVOIR PACKAGE FOR LIQUID-DISPENSER HAVING VALVE AND OPERATING FLOAT

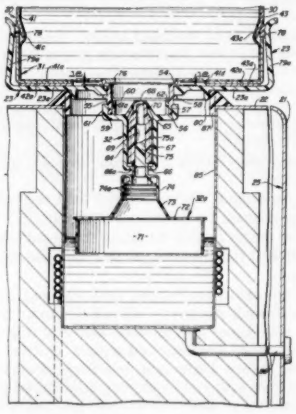
Warren J. Schieser, Columbus, Ohio, assignor to Corco, Inc., Worthington, Ohio

Filed Dec. 19, 1972, Ser. No. 316,466

Int. Cl. B65d *37/00;* **B67d** *5/06*

U.S. Cl. 222—105 **7 Claims**

1. A package assembly for use as a disposable reservoir in a liquid dispensing unit comprising an outer protective box and an inner flexible bag disposed within and protected by the outer box, said box having a substantially flat wall adapted to rest on a support surface when in dispensing position on the dispensing unit with the bag filled with liquid, said bag having a neck which is adjacent said flat wall with the bag filled, a valve member on the neck for controlling discharge of liquid through said neck in cooperation with a valve seat on the neck, a guide sleeve in which said valve member is slidably mounted for axial movement between seated and unseated positions relative to said seat, said valve guide sleeve extending axially outwardly of the neck, said substantially flat box wall having an opening through which the valve guide sleeve and neck can project, means for locking the neck in said opening in a position such that the axis of the valve guide sleeve will be substantially normal to the flat wall and the neck will be locked in fixed axial position, said valve member seating on said valve seat when moved axially inwardly but dropping downwardly by gravity when the box with the filled bag is resting on said flat wall in dispensing position, a float for attachment to the slidable valve member, said valve member being movable to closed position by said float when attached thereto and positioned in said well to maintain a predetermined level of liquid in the well, said means for locking the neck in said opening comprising a locking panel at said flat wall having a keyhole slot at said opening, said neck having a radially outwardly opening locking groove on its exterior, said

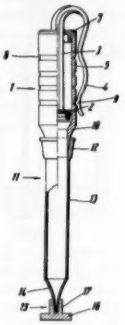


keyhole slot having a wide portion through which the neck can pass axially and a communicating narrow portion into which the neck can be moved laterally to lock it axially at said locking groove, said locking panel being part of an adapter which is adapted to support the box on the support surface of the dispensing unit which is substantially horizontally disposed, said panel of the adapter having a flat surface providing said flat support surface on which the flat wall of the box rests, said panel having said keyhole slot formed therein, and locating means extending from said flat support surface of said panel for locating the flat wall of the box on said flat support surface of the panel to locate said opening in said box wall in cooperation with said keyhole slot in said adapter panel, said box having side walls at right angles to said flat wall, said locating means on the adapter panel including a pair of opposed resilient box-gripping flanges which extend outwardly from said flat support surface of the panel and are adapted to extend over and grip said side walls of the box when the box is inserted therebetween, said box side walls having locking slots therein adjacent said box flat wall, and inwardly extending locking lugs on said box gripping flanges for interlocking with said slots to retain the box on the adapter with its flat wall resting on the support surface of the adapter panel.

3,848,777
DEVICE FOR RECEIVING AND DISPENSING VARIABLE LIQUID QUANTITIES

Walter Sarstedt, Numbrecht/Rommelsdorf; Hans-Dieter Krause, Hannover, and Hermann Wisser, Stuttgart-Feuerbach, all of Germany

Filed Aug. 29, 1972, Ser. No. 284,506
Claims priority, application Germany, Aug. 30, 1971, 7133041; Jan. 24, 1972, 2203174
Int. Cl. G01f *11/06*
U.S. Cl. 222—386 4 Claims

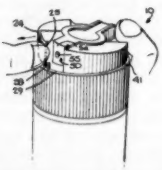


1. A device for receiving and dispensing variable quantities of liquid such as blood and blood serum, said device comprising: a cylinder, a plunger disposed within said cylinder in hermetically sealed sliding relationship with said cylinder, a plunger rod extending out of the top end of said cylinder and in a U-shape to define a corrugated handle portion resiliently engaging the outer periphery of said cylinder, at least one of said cylinder and said plunger rod having graduations thereon, a smooth collar disposed at the bottom end of said cylinder and defining an opening therein, and a pipette having an upper end for frictionally engaging said collar and a lower end defined by a thin drawn out tip, said graduations including a plurality of axially spaced annular grooves extending about said cylinder, said handle including a detent projection which may be disposed in any one of said grooves upon axial movement of said handle portion.

3,848,778
CHILDPROOF ACTUATOR ASSEMBLY

Philip Meshberg, 85 Old Oak Rd., Fairfield, Conn. 06604

Filed Aug. 14, 1972, Ser. No. 280,432
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.11 20 Claims

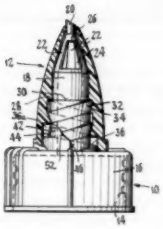


1. In combination with
a container,
a dispensing valve assembly secured to the container, and
a actuator assembly including
a housing member mounted on the container,
an actuator member mounted in the housing in operable connection with the valve,
the actuator being rotatable about the longitudinal axis of the container between a non-dispensing position and a dispensing position,
blocking means for preventing operation of the valve when the actuator is in the non-dispensing position, and means for deterring rotational movement of the actuator when the actuator is in the non-dispensing position, wherein the improvement comprises:
A. the deterring means being a locking means for preventing rotational movement of the actuator when the actuator is in the non-dispensing position, the locking means having cooperable portions one of which is a resilient flap portion of the housing member radially movable between engaging and disengaging positions with respect to the other,
whereby when the locking means is disabled by moving the one portion to the disengaging position, the actuator can be rotated free of the blocking means to the dispensing position for dispensing product by operating the actuator valve, and when rotated to the non-dispensing position the resilience of said flap will cause said locking means to engage.

3,848,779
CAPTIVE DISPENSING CAP CONSTRUCTION

Morton B. Stull, 2132 81st St. Gulf, Marathon, Fla. 33050

Filed Sept. 8, 1969, Ser. No. 855,971
Int. Cl. B67d *3/02*
U.S. Cl. 222—521 5 Claims



1. A captive dispensing cap construction comprising, in combination:
a. a tubular body part adapted to be carried by a container and having a discharge spout,
b. a screw cap part carried by said body part and surrounding said discharge spout,
c. said cap and body parts having two pairs of mutually engageable portions,
d. one pair of mutually engageable portions comprising cooperable screw thread means respectively on said parts, for moving the cap part axially on the body part as the cap part is turned,
e. the other pair of mutually engageable portions comprising cooperable stop lugs respectively on the body and cap parts,
f. one set of surfaces of the lugs becoming engaged and acting in a manner to halt clockwise turning of the cap part in screwing-on direction as the cap part is screwed toward its full-on position on the body part,
g. another set of surfaces of the said lugs becoming engaged and halting the opposite, unscrewing, turning of the cap part as the latter is unscrewed through part of a revolution from said full-on position,

h. one of said stop lugs having a sloping face with respect to the other stop lug to facilitate bypass of the lugs as the cap part is screwed onto the body part,

i. at least one of said portions of the said one pair of the mutually engageable portions comprising the cooperable screw threads of the said parts being resilient and yieldable to enable the cap part to shift so that the stop lug on the cap part can be forced past the stop lug on the body part as the cap part is applied to the body part and screwed toward its full-on position,

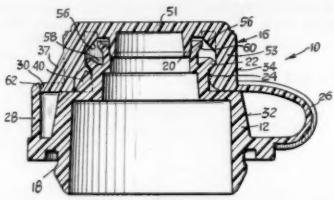
j. one of said parts of the cap construction having a recess adjoining the stop lug thereof and in the path of movement of said other stop lug but disposed circumferentially past the stop lug it adjoins, so as to freely receive the other stop lug of the other part after the lugs have bypassed each other, thereby to enable the screw thread means to continue freely for an interval to further move the cap part axially during the turning thereof.

3,848,780

SAFETY CAP

Morton B. Stull, c/o Stull Engraving Co., 221-223 Banta Ave., Garfield, N.J. 07026

Filed Feb. 13, 1974, Ser. No. 441,934
Int. Cl. B65d *47/00*
U.S. Cl. 222—546 **13 Claims**



1. A safety cap for small dispensers of the hand-held type and the like, comprising in combination:

a. a tubular cap body having a top discharge opening,

b. a captive closure cap adapted to fit the opening of the cap body so as to seal the same,

c. cooperable yieldable retainer means on the cap body and cap, tending to hold the latter firmly on said body in sealing position,

d. a flexible hinge web structure connecting said cap body and closure cap for holding the latter captive while enabling it to be swung from the sealing position closing off the body to a discharge position removed from the opening of the body,

e. said cap and body having cooperable bearing means enabling the cap to be turnably shifted on the body within limits as determined by the web structure,

f. an interference lug and a lifting tab disposed respectively on the cap body and cap so as to overlie and be in registration with one another when the cap has been swung about the web structure to its sealing position on the body,

g. said hinge web structure being sufficiently long to enable the cap, when in its sealing position, to be turned within said limits so as to shift the lifting tab thereof out of registration with the interference lug on the cap body, and

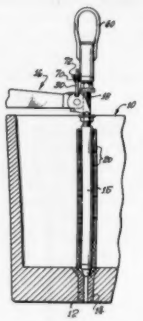
h. detent means for yieldably holding the cap in a turned position on the cap body wherein the lifting tab is out of registration with the interference lug so that a user's finger can be applied to the underside of the lifting tab for the purpose of removing the cap, thereby enabling the user to readily remove the cap without tending to return to the registration position under the action of the web structure.

3,848,781

QUICK RELEASE STOPPER ROD FOR STEEL MILL LADLE

Joseph E. Springer, 11211 Monte Vista, Ontario, Calif. 91761

Filed Feb. 20, 1973, Ser. No. 334,006
Int. Cl. B22d *37/00*
U.S. Cl. 222—559 **21 Claims**



1. In the combination of a ladle having a bottom port to pour molten metal, a stopper rod in the ladle to open and close the bottom port and support structure carried by the ladle to support and control the stopper rod, the improvement comprising:

the stopper rod being equipped for cooperation with a crane to lift the stopper rod out of the ladle;

said support structure being equipped with attachment means to releasably connect the stopper rod to the support structure;

said attachment means being variable between a first state to connect the stopper rod to the support structure and a second state to release the stopper rod from the support structure; and

a latch to releasably retain said attachment means in its first state,

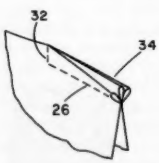
said latch being responsive to lifting force on the stopper rod by a crane to release the attachment means for shift from its first state to its second state to release the stopper rod from the support structure.

3,848,782

METHOD FOR FORMING PINCH PLEATS FOR DRAPERIES

Robert A. Rekker, 428 Howe Ave., Passaic, N.J. 07055

Filed Apr. 9, 1974, Ser. No. 459,312
Int. Cl. A41b *43/00;* **D06j** *1/00*
U.S. Cl. 223—34 **1 Claim**



1. A method for forming winged pinch pleats, comprising the steps of:

a. positioning and sewing a stiffening means in supporting abutment to an area of drapery material intended for use as a heading of a drape;

b. folding a portion of said area in order to define upper and lower horizontal limits to said heading;
c. marking off a plurality of centerlines, each centerline being transverse with respect to the major axis of the heading;
d. aligning one edge of a pleat gage with one of said centerlines;
e. folding said heading about said pleat gage in order to form a longitudinal loop corresponding in cross-section to the total of the cross-sections of the wings of the desired pleat;
f. stitching said loop parallel to the edge of said pleat gage opposite to said centerline;
g. inserting a pleat former within said longitudinal loop;
h. pressing the material of said loop, including said stiffening means, into firm contact with said pleat former in order to conform said material into the shape of said pleat former and thereby of a pleat;
i. withdrawing said pleat former; and
j. stitching the lower ends of the wings of said pleat, thereby securing the pleat into its ultimate form.

3,848,783

BICYCLE LOCK CARRYING BRACKET

Sidney Falk, Chicago, Ill., assignor to Fort Lock Corporation, River Grove, Ill.

Filed Apr. 12, 1973, Ser. No. 350,347
Int. Cl. B62j *11/00*
U.S. Cl. 224—39 R **3 Claims**

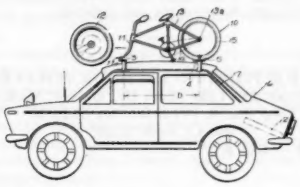
1. A bracket for connection with a tubular frame member of a bicycle for carrying a lock of the type including a flexible cable, said bracket comprising a clamp having a generally C-shaped body portion terminating in resiliently yieldable first and second legs projecting outwardly from said body portion, said first leg including a detent latching means adapted to attachably receive said second leg for clamping said C-shaped portion about said tubular frame member, an elongated flexible strap transversely connected to one of said legs intermediate the ends of said strap, and the opposite ends of said strap including bent over flanges defining inwardly and outwardly facing pockets extending perpendicular to said strap so that the flexible bicycle lock cable may be coiled about the strap ends when they are flexed towards one another and when said strap ends are released they resiliently hold the coiled lock cable on said bracket.

3,848,784

BICYCLES-LADING APPARATUS

Keizo Shimano, and Tokiharu Nishino, both c/o Shimano Industrial Co., Ltd., No. 77, 3-cho, Oimatsu-cho, both of Osaka, Japan

Filed Jan. 3, 1972, Ser. No. 214,604
Claims priority, application Japan, June 26, 1971, 46-46635
Int. Cl. B60r *9/10*
U.S. Cl. 224—42.1 F **7 Claims**



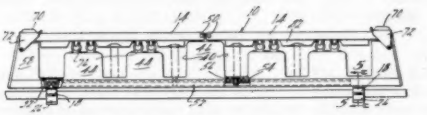
1. An apparatus mounted on the roof of a passenger car and adapted to carry bicycles whose front wheels are dismounted from the pawl members of the front forks comprising,
a. mounting means rigidly fixed on said roof of the passenger car,
b. frame members fixed to said roof through means of said mounting means,
c. fixing means which are fixed to the upper surface of said frame members and adapted to fix the front forks of the bicycles thereto comprising plates secured to said frame members, cylindrical shafts secured to said plates and disposed substantially in parallel to said frame member, hollow shafts insertibly fixed to each of said cylindrical shafts, lock nuts releasably securing said hollow shaft to said cylindrical shaft, a solid rod inserted in each said hollow shaft and each having one end thereof provided with threads and the other end provided with a projection bored with a transverse hole, a nut means screwably engageable with said threads of the rod, a cam means inserted in said transverse hole, and a cap nut for rotatably supporting said cam means, whereby each fork tine is clamped between said lock nut and said nut means at one end and said lock nut and said cap means at the other end of said solid rods,
d. wheel lading stands which are fixed to said upper surface of the frame member and adapted to mount thereon the rear wheels of said bicycles and,
e. retaining means for fixedly securing said rear wheels to said wheel lading stands.

3,848,785

SKI RACK FOR MOTOR VEHICLES

John A. Bott, 931 Lake Shore Dr., Grosse Pointe Shores, Mich. 48236

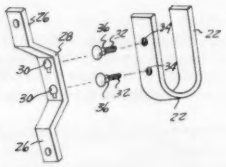
Filed May 14, 1973, Ser. No. 360,096
Int. Cl. B60r *9/12*
U.S. Cl. 224—42.1 F **7 Claims**



1. A ski rack for an automotive vehicle including a pair of longitudinally spaced holders each including a base provided

with a plurality of upstanding bosses defining recesses therebetween adapted to accommodate skis with their edges set on the bottoms of said recesses, a plurality of upwardly open pole receptacles on the tops of said bosses and at least one closure bar assembly pivoted on said base and arranged to contact both the upper edges of skis in said recesses and poles in said receptacles, spaced supports engageable with the underside of each of said bases, fasteners connecting said bases to said supports, and independent attaching means for connecting said supports to the vehicle body whereby said bases and their closure bars may be removed from said supports without disturbing said attaching means and supports.

3,848,786
PIPE SUPPORTING RACK FOR VEHICLE
James S. Baxter, 214 Lake Shore Dr., Oxford, Mich. 48051
Filed Dec. 4, 1972, Ser. No. 312,026
Int. Cl. B60r *11/00*
U.S. Cl. 224—42.45 R **1 Claim**



1. Means for transporting an elongated object having a circular cross setion, comprising:

a vehicle;

a plurality of brackets each having upper and lower portions rigidly attached to the vehicle at a common vertical height, and horizontally spaced to accomodate the length of the elongated object, each bracket having a horizontally off-set mid-section with a pair of vertically spaced key-hole shaped openings in which the large end of each opening is above the narrow end thereof;

a U-shaped support for each bracket, each support having a pair of spaced sides forming a top opening for receiving the elongated object, and a semi-circular bight having a diameter greater than that of the circular cross-section of the elongated object; and

a pair of members carried on one side of each support and received in respective key-hole shaped openings, each member having a head and a neck, the head being larger than that of the narrow end of the key-hole shaped opening but smaller than the large end thereof, the head being spaced a distance from the support accomodating the thickness of the bracket, and the neck having a diameter suited for being received in the small end of the key-hole shaped opening, whereby the supports are aligned to cooperate in removably receiving an elongated object such as a section of pipe.

3,848,787
TRAVEL TOTES
Edward J. Hill, 1660 Lochridge Rd., Bloomfield Hills, Mich. 48103
Filed Oct. 15, 1973, Ser. No. 406,573
Int. Cl. A45c *13/26*
U.S. Cl. 224—45 T **5 Claims**

1. A tote means for use by travelers and others for carrying on one's shoulder clothing or other items mounted on conventional hook type hangers or the like, said items being bagged as required against damage by rain or dust, comprising

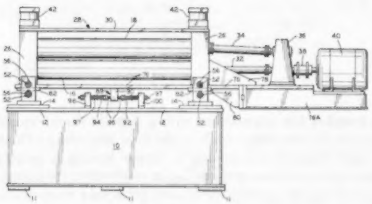
a. an upper rear shoulder element formed of suitable tubing vertically flattened at its upper rearwardly disposed end portion, is vertically curved at its central portion, and terminates in a diagonally downwardly extending straight open end portion,

b. the said vertically flattened end portion of said rear shoulder element having a plurality of transverse large and small apertures therethrough spaced to receive the hooked end of items to be hung on and carried by said tote,

c. a resilient pad secured to the bottom of the vertically curved central portion of said upper rear shoulder element whereby to provide cushioning means supporting the said tote on the shoulder of its user, and

d. a front guide element including a hand grip fixed on the lower end thereof and means fixed on the upper end thereof removably securing said front guide element in non-turnable relationship with respect to the said downwardly extending end portion of said upper rear shoulder element.

3,848,788
CONTINUOUS STRIP FEEDING SELF-ALIGNMENT APPARATUS
John R. Buta, Salem, Ohio, assignor to Paxon Machine Company, Salem, Ohio
Filed July 23, 1973, Ser. No. 381,909
Int. Cl. B65h *25/26*
U.S. Cl. 226—19 **16 Claims**

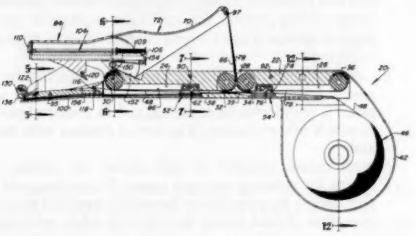


1. Apparatus for feeding metal strip comprising a support base, a pair of vertically opposed horizontally aligned pinch rolls mounted on a horizontal platform above said support base and shiftable with respect to said support base, fixed guide means on said base with which said shiftable platform is engaged, said guide means being adapted to permit horizontal arcuate transverse movement of said platform in reaction to forces of lateral thrust between said rolls and said strip.

3,848,789
BINDING AND LABELING APPARATUS

William J. Baker, Reed City; John R. Bos, Grand Haven, and Robert W. Klemm, Reed City, all of Mich., assignors to Gardner-Denver Company, Dallas, Tex.

Filed Nov. 15, 1973, Ser. No. 416,054
Int. Cl. B25c *5/02*
U.S. Cl. 227—76 **21 Claims**



1. Apparatus for applying a closed loop of binding material such as tape or the like around an article and characterized by: a frame;

feeding means supported by said frame for feeding a length of tape around an article;

operating means for operating said feeding means to feed said length of tape;

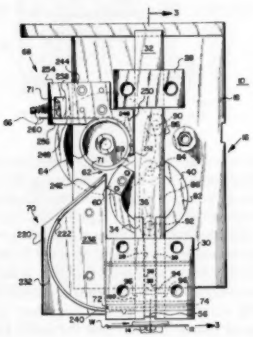
flexible guide means movable for guiding said tape in a curved path substantially around said article; and,

means for fastening said tape to form a closed loop.

3,848,790
STITCHING HEAD APPARATUS

William G. A. Verwey, Phoenix, and Stephen L. Stanton, Baltimore, both of Md., assignors to Precision Industries, Inc., Baltimore, Md.

Filed Feb. 22, 1973, Ser. No. 334,740
Int. Cl. B27f *7/16*
U.S. Cl. 227—90 **11 Claims**



1. A wire stitching head comprising,

a frame;

stitch forming means mounted on said frame for forming a preselectively shaped stitch from a preselected length of wire which has been supplied thereto;

stitch driving means movably mounted with respect to said stitch forming means for driving the stitch formed by said stitch forming means into a work piece positioned in predetermined relationship with respect to said stitching head;

wire feeding means for intermittently supplying said preselected length of wire to said stitch forming means from a supply of wire; and

first wire guiding means mounted on said frame for guiding said wire toward said stitch forming means, said first wire guiding means comprising;

a base having an arcuate channelway therein, and

a cover plate movably positioned on said base and movable between a first position in which said cover plate covers said channelway in said base and a second position in which said channelway in said base member is exposed; and

further including a guide member secured to said frame for guiding the movement of said stitch forming means, said guide member including a guide channel of predetermined width and a passageway through which said wire passes to reach said guide channel; said first wire guiding means being secured to said frame with one end of said arcuate channelway located adjacent the entrance to said passageway; and

wherein said wire feeding means includes: a cam wheel mounted on said frame, driving means selectively rotating said cam wheel, a guide roller mounted on said frame, driving means for rotating said guide roller, said guide roller mounted on said frame in proximity to said cam wheel to define a path of travel for said supply of wire therebetween, said path of travel having an entrance location for the reception of said wire and an exit location for the exit of said wire; the other end of said arcuate channelway located adjacent the exit location of said path of travel to receive the wire exiting therefrom; and

wherein said driving means for rotating said guide roller includes a drive shaft freely rotatable in said frame, said drive shaft having said guide roller secured thereto at one end thereof, and motive means for rotating said drive shaft; and said driving means for selectively rotating said cam wheel includes a driven shaft freely rotatably in said frame, said driven shaft having said cam wheel secured thereto at one end thereof, and clutch means selectively operative to interconnect said drive shaft and said driven shaft; and

wherein a second end of said driven shaft includes a chordal flat thereon and further including first and second contact switches mounted on said frame in proximity to said second end of said driven shaft, each of said first and second contact switches including a movable contact which engages the periphery of said second end of said driven shaft and is movable between first and second positions in response to engagement with said chordal flat;

further including counter means responsive to first signals from said first contact switch; and first control means responsive to said first signals for controlling deactivation of said clutch means; and

further including pull roll means for advancing a blank past said stitching head; clutch-brake means for intermittently controlling said pull roll means; and second control means responsive to second signals from said second contact switch for controlling the operation of said clutch brake means.

3,848,791
APPARATUS FOR FABRICATING WOODEN FRAMES

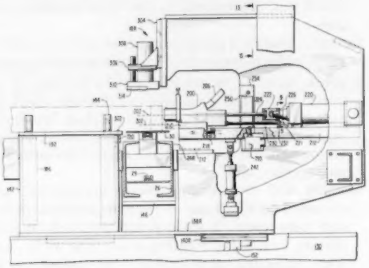
John Calvin Jureit, 8901 Arvida Ln., Coral Gables, Fla. 33156; Howell J. Cotten, Rt. 1, Box 280, Keswick, Va. 22947; Adolfo Castillo, 7761 S.W. 18th Ter., Miami, Fla. 33155, and Roy Leutwyler, 1016 N.W. 43rd St., Miami, Fla. 33127

Filed Feb. 1, 1973, Ser. No. 328,605
Int. Cl. B27f *7/02*
U.S. Cl. 227—100 **32 Claims**

1. Apparatus for fabricating a wooden frame, panel or the

like having a pair of elongated frame members and a plurality of intermediate members spaced one from the other and extending between the elongated frame members comprising: means for supporting the pair of elongated frame members with an intermediate frame member extending therebetween in a generally common horizontal plane, a pair of nailing assemblies along respective opposite sides of said support means,

a nailing gun carried by each of said nailing assemblies, means for actuating each of said nailing guns for driving



a nail through the corresponding elongated frame member and into the corresponding end of the intermediate frame member,

means mounting said nailing guns for movement between discrete positions for driving nails through each elongated member at different elevations, and

means for automatically shifting said nailing guns from one elevation to another elevation in response to completion of nailing at said one elevation in order to drive a nail at said other elevation.

3,848,792

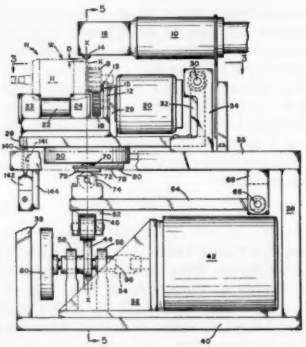
VIBRATORY WELDING APPARATUS

Bruce L. Mims, Redding, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Division of Ser. No. 293,366, Sept. 29, 1972, Pat. No. 3,791,569. This application Nov. 7, 1973, Ser. No. 413,554

Int. Cl. B23k *5/20*

U.S. Cl. 228—1 **9 Claims**



1. A nesting structure for a workpiece to be welded by vibratory energy sequentially at several circumferentially spaced locations comprising:

support means for receiving the workpiece in indexed position;

means for rotationally indexing the workpiece while disposed on said support means;

means for causing said support means with the workpiece supported thereon to undergo reciprocating motion for causing alternatingly the workpiece engaging tip of a vibratory welding apparatus to engage the workpiece or be withdrawn therefrom;

force exerting means coupled between said support means and said means for causing said support means to undergo reciprocating motion for causing a workpiece on said support means to be in forced contact with the workpiece engaging tip;

means disposed for sensing the condition when said support means is disposed in a first position in which the workpiece is withdrawn from the tip and in a second position in which the workpiece is in forced contact with the tip, and

control means coupled to said means for sensing, said means for indexing and said means for causing said support means to undergo reciprocating motion for causing operation of said means for indexing when said support means is in said first position and causing operation of the means providing vibratory energy when said support means is in said second position.

3,848,793

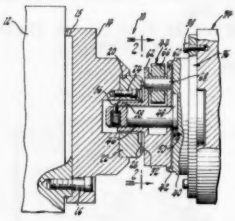
FRICTION WELDER

Stanley W. Herman, Nashville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 203,263, Nov. 30, 1971, Pat. No. 3,780,422. This application Aug. 24, 1973, Ser. No. 391,214

Int. Cl. B23k *27/00*

U.S. Cl. 228—2 **3 Claims**

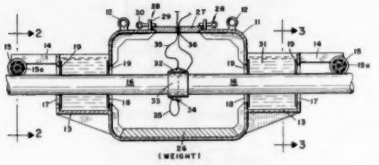


1. A friction welder comprising a drive member headstock rotatable about an axis, a welder head rigidly secured to said rotatable drive member headstock for rotation therewith, a rotatable friction welding tool rigidly secured to said welder head, said tool having a workpiece contact portion of a temperature stable material radially spaced from said axis and extending axially from said welder head, a tailstock, holding means operatively connected to said tailstock for rigidly holding first and second workpieces together each workpiece having an outer planar face so that the outer faces thereof are aligned in a common plane, means for relatively moving said headstock and tailstock axially so that said contact portion of said rotating friction welding tool initially contacts and frictionally heats material in an annular track portion in the outer faces of said workpieces to a plasticized condition and intermixes the plasticized material of said workpieces to thereby effect a bond that subsequently solidifies to securely join said workpieces together when said contact portion of said rotating tool is moved from frictional engagement with said workpieces.

3,848,794
BLAST CHAMBER

William G. Howell, Lakewood, Colo., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Mar. 12, 1973, Ser. No. 340,133
Int. Cl. B23k 21/00
U.S. Cl. 228—3 20 Claims



1. Apparatus for containing an explosive force developed by the explosive welding of pipe sections which comprises:

a blast chamber having first and second at least partially open ends, in which said explosive is adapted to be enclosed;

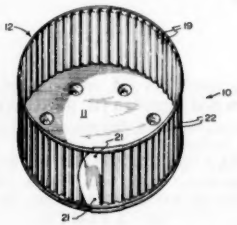
means for closing said first and second ends at least partially such that there is provided an opening in said first and second ends sufficient for passage of pipe sections of selected size into abutting relationship in said chamber with said pipe sections extending longitudinally therefrom; and

means for containing a fluid arranged around at least one of said pipe sections extending longitudinally from said chamber to form a water trap around at least said one pipe section on at least one of said ends and substantially adjacent at least one of said openings for substantially containing the explosive force and noise resulting from the explosive welding of the pipe sections.

3,848,795
TEAR-AWAY PACKAGE

Stanford W. Bird, Salt Lake City, Utah; Jerome D. Wasserman, Arlington Heights, and Earl L. Hatley, Lake Bluff, both of Ill., assignors to Plastronics Corporation, Salt Lake City, Utah, by said Stanford W. Bird and Consolidated Foods Corporation, Chicago, Ill., by said Wasserman and Hatley

Filed Mar. 29, 1972, Ser. No. 239,238
Int. Cl. B65d 11/02, 11/24
U.S. Cl. 229—23 R 2 Claims



1. A cake container comprising

a substantially rigid flat base having a curved bead formed around an upper peripheral edge thereof and an outwardly flared ridge formed around a lower peripheral edge thereof and with a groove formed peripherally around the base between the bead and the ridge;

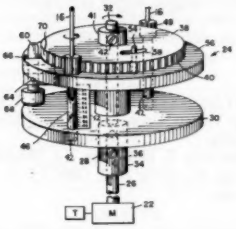
a wall, formed from a strip of flexible, somewhat resilient material, and having a lower edge wrapped around the base, said lower edge having an outwardly flared ridge extending beneath a groove; and said wall having a groove extending around the top thereof;

means coupling the ends of the strip forming the wall whereby the ends of the groove extending around the top of the wall are nested, the ends of the groove at the lower edge are nested and the ends of the outwardly flared ridge are nested and the wall is of generally ring shaped, whereby the bead of the base fits into the groove at the bottom edge of the wall and the outwardly flared ridge of the wall fits into the groove formed between the bead and the ridge of the base.

3,848,796
CENTRIFUGE APPARATUS FOR SEDIMENTATION STUDY

Brian S. Bull, Loma Linda, Calif., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Division of Ser. No. 191,336, Oct. 22, 1971, which is a continuation-in-part of Ser. No. 113,166, Feb. 8, 1971, abandoned. This application Sept. 27, 1972, Ser. No. 292,540
Int. Cl. B04b 9/08
U.S. Cl. 233—25 20 Claims



1. A sedimentation rate centrifuge comprising, a centrifuge head, a driven shaft mounting said head for rotation therewith and a drive motor coupled to said driven shaft for imparting rotative motion thereto about the axis of said head in intermittent periods of predetermined duration to generate centrifugal force applicable in a direction generally normal to its axis of rotation, said centrifuge head comprising a body, sample tube holder means carried by said body near the periphery thereof, said sample tube holder means each constructed and arranged to receive elongate sample tubes each containing a thin column of blood and each vertically arranged and oriented substantially parallel to the axis of rotation of said body so that the centrifugal force is applied laterally to the long axis of said sample tubes, means for causing periodic rotation of each of said sample tube holder means and associated sample tube about its own long axis between each application of centrifugal force and when said body is substantially at rest.

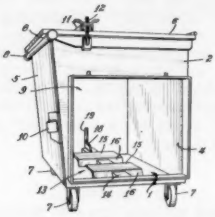
3,848,797
RUBBISH COMPACTOR-CONTAINER WITH LOAD RELEASE

Byron M. Kolling, Glen Ellyn, Ill., assignor to Bynal Products, Inc., Franklin Park, Ill.

Filed Mar. 23, 1973, Ser. No. 344,229
Int. Cl. B30b 15/32
U.S. Cl. 232—43.1 7 Claims

1. A rubbish compactor-container comprising a container having side and end walls and a floor and a cover adapted to close the otherwise open top thereof, at least one of said walls flaring outwardly toward the top, one of said end walls having an opening therein for feeding rubbish into said container and compacting the rubbish within said container, a lift normally resting in the bottom of the container and having load-engaging top surfaces adapted to support a body of compacted

rubbish throughout the bottom thereof and elevate said body within said container, and means for elevating said lift suffi-



ciently to loosen a body of compacted rubbish to dump the same from said container.

ERRATUM

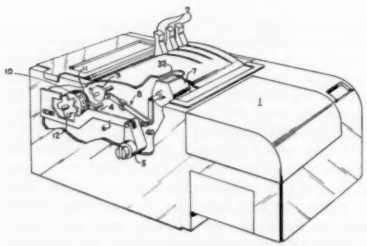
For Class 233—25 see:
Patent No. 3,848,796

3,848,798

CREDIT SYSTEM FOR POSTAGE METERS

Gilbert N. Riley, Wilton, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Aug. 3, 1973, Ser. No. 385,449
Int. Cl. G07g *1/00;* **G06f** *15/18*
U.S. Cl. 235—101 **10 Claims**



1. A credit apparatus for a machine, comprising:
register means for registering the extent to which said machine has been operating;
register locking means associated with said register means for preventing further operation of the machine after a first predetermined limit of operation has been registered by said register;
disabling means including a lock, said disabling means associated with said register locking means for disabling said register locking means and for permitting said machine to continue operation and said register means to register a second predetermined limit of operation; and
means associated with said disabling means for maintaining a record of the number of times said disabling means disables the register locking means.

ERRATUM

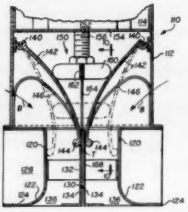
For Class 235—552 see:
Patent No. 3,848,811

3,848,799

CEILING AIR DIFFUSER

Thomas L. Day, Brookfield, Conn., assignor to Connor Engineering Corporation, Danbury, Conn.

Filed July 12, 1973, Ser. No. 378,623
Int. Cl. F24f *7/06*
U.S. Cl. 236—49 **3 Claims**



1. An air diffuser of the elongated-slot type for mounting on a ceiling tee bar, comprising:
an elongated air plenum chamber housing;
at least one elongated vertically disposed outwardly flaring lower side wall, depending from the corresponding side wall of said air plenum chamber housing and defining the outerside of an elongated air discharge slot of the air diffuser;
a pair of vertically disposed transverse end plates, one at either end of the air diffuser, each of said end plates having a centrally located notch adapted to fit over and engage the vertically upstanding web of the ceiling tee bar, so that when the air diffuser is mounted in place, the vertical web and one horizontal flange of the ceiling tee bar appear normally as in other areas of the ceiling, but help to hide from view the operating mechanism of the diffuser;
at least one elongated air flow control vane pivotally mounted at its upper end, with its lower free end resiliently urged toward one side of the elongated air discharge slot to a position in which said air flow control vane cuts off communication between said air plenum chamber housing and the air discharge slot; and
means for selectively positioning the free lower end of said air flow control vane and variably opening communication between said plenum chamber housing and the air discharge slot, thereby regulating the effective air outlet opening.

3,848,800

BOOSTER FOR CENTRAL HEATING INSTALLATION WITH AUTOMATIC REGULATION

Maurice Perche, Boulogne, France, assignor to ITT Industries, Inc., New York, N.Y.

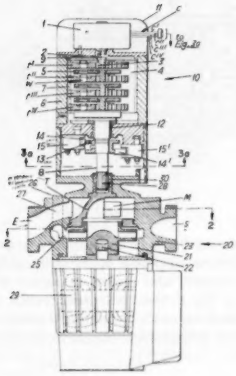
Filed Sept. 27, 1972, Ser. No. 292,647
Claims priority, application France, Sept. 28, 1971, 71.34765; Nov. 26, 1971, 71.42351; Mar. 30, 1972, 72.11173
Int. Cl. F24d *3/02*
U.S. Cl. 237—8 A **13 Claims**

1. Booster apparatus for automatically controlling the circulation of fluid in a heat exchanger system, comprising
a pump adapted to be connected to a fluid circulating system,
a first motor coupled to drive said pump,
a hydraulic flow regulator mounted in said pump to enable selection of flow-pressure characteristics of said pump and thereby a suitable operation point,
a rotatable valve associated with said pump to control the flow rate through the pump,

a second motor coupled to control the position of said rotatable valve,

control means responsive to signals from thermostatic control means to position said second motor and said rotatable valve and control flow through the pump accordingly, and

means positioning the pump, the first motor and the second motor together in a common housing.



3,848,801

PROCESS FOR THE TRANSFORMATION OF THE INTERIOR STRUCTURE OF CLOUDS

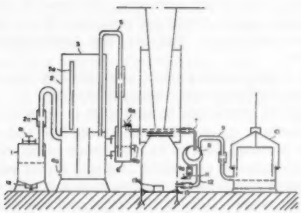
Fred Ollivier, and Gerald Ollivier, both of Manosque, France, assignors to Pepro Societe Pour le Development et la Vente de Specialities Chemiques, Lyon, France

Filed June 4, 1973, Ser. No. 367,008

Claims priority, application France, June 16, 1972, 72.22941; Nov. 20, 1972, 72.41746; May 29, 1973, 73.21153

Int. Cl. E01h *13/00*

U.S. Cl. 239—2 R **12 Claims**



1. A process for the transformation of the internal structure of visible cloud banks to avoid hail-storms, comprising

igniting an explosive composition to create a sudden upward movement of energy directed to form shock waves at cloud level, and

repeating said igniting step at time intervals of less than **25** seconds for a period of time sufficient to modify the internal structure of visible cloud banks at the cloud level to avoid hail-storms.

3,848,802

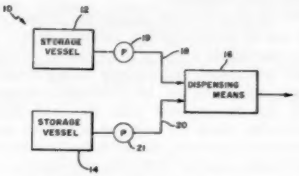
METHOD AND APPARATUS FOR THE PREPARATION AND EJECTION OF A VISCOUS DILATANT MATERIAL

Edward R. Degginger, Convent Station, and John S. Frisco, North Bergen, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,569

Int. Cl. B05b *1/34*

U.S. Cl. 239—10 **10 Claims**



1. A process for preparing and then ejecting a viscous dilatant material comprising the steps of:

a. passing separate aqueous solutions of an alkali metal borate (component A) and a water-soluble vinyl alcohol polymer (component B) through separate conduits to a point of convergence within a dispensing means thereby partially converting each component to said viscous dilatant material;

b. mixing said partially converted components within said dispensing means to obtain substantially complete conversion to said viscous dilatant material; and

c. ejecting said viscous dilatant material from the dispensing means in the form of a spray.

3,848,803

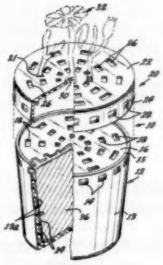
DECORATIVE ROOM AIR TREATING DEVICE

John S. Levey, 4059 Mariners Cir., Westlake Village, Calif. 91361

Continuation-in-part of Ser. No. 353,086, April 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 250,181, May 4, 1972, abandoned. This application May 25, 1973, Ser. No. 363,811

Int. Cl. B05b *1/30*

U.S. Cl. 239—59 **5 Claims**



1. A decorative room air treating device, said device comprising:

an inner container and an outer container, said containers both having sidewalls with circular cross-sections about a common axis, and, at least, one of said containers being closed by a transverse bottom wall, and both said containers being so dimensioned that the inner container fits closely but rotatably within the outer container, the side

walls of each of said containers being provided with a plurality of orifices spaced thereabout, the orifices of the inner container being so disposed that in a first rotational angular position relative to the outer container, none of the orifices of the inner container falls in registry with any of the orifices in the outer container, and, in a second such relative rotational angular position, a plurality of the orifices of the inner container falls into registry with those of the outer container;

an evaporative air treating substance disposed within the walls of the inner container, a decorative base to support both said containers;

means to interlockingly engage the bottom of the sidewall of one of said containers with said base;

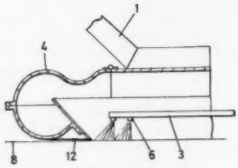
and a decorative capping to be placed coaxially over both said containers, said capping having means to interlockingly engage the top rim of the other of said two containers not so engaged with the said decorative base, whereby, when the capping is rotated about said axis relative to the base, the container interlockingly engaged with said capping will be correspondingly rotated relative to the other container interlockingly engaged with the base, thereby to dispose said inner container in either its said first or second rotational angular positions relative to the outer container, or in any position therebetween.

3,848,804

SURFACE CLEANING

John Richard Prestwich, Maidenhead, England, assignor to Warwick Pump and Engineering Company Limited, Dorchester on Thames, Oxfordshire, England

Filed Nov. 21, 1972, Ser. No. 308,464
Int. Cl. B05b *9/02*
U.S. Cl. 239—160 **14 Claims**



1. A device for cleaning a surface which comprises: at least one nozzle carried by said device for directing water downwardly onto the surface; means for imparting motion to the said or one of said nozzles relative to the device to continuously move the said or one of said nozzles substantially transverse to a general direction of advance of the device; means for directing water through the said or one of said nozzles during a normal cleaning operation when the said or one of said nozzles is in said continuous movement substantially transverse to the general direction of advance of the device.

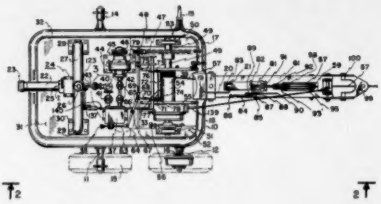
3,848,805

WINCH-DRIVEN IRRIGATION APPARATUS

Burr Courtright, LaGrande, Oreg., assignor to CH2O, Inc., LaGrande, Oreg.

Filed Nov. 7, 1973, Ser. No. 413,702
Int. Cl. B05b *3/18*
U.S. Cl. 239—189 **10 Claims**

1. Agricultural irrigation apparatus comprising a horizontal frame provided with supporting wheels; an erect, water delivery structure mounted to said frame and having a fluid input; a drive line including a speed-reduction transmission having input and output drives; a water-pressure-to-revolving-mechanical-power converter having water inlet structure constructed for coupling to an external water-carrying hose, a revolving output drive coupled to said transmission input drive, and a fluid outlet coupled to said fluid input of said water delivery structure; a winch drum journaled to said frame and having an input drive coupled to said output drive of said transmission; a winch cable having an inner end wound upon said winch drum and an outer end constructed for extension



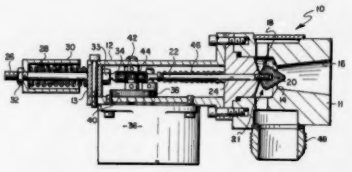
forwardly of said frame to be anchored to the external object; a stop abutment disposed upon said cable proximate said outer end thereof; and means mounted to said frame and responsive to the contact with said means of said stop abutment, for simultaneously braking said wheels and also braking said revolving output drive of said converter.

3,848,806

THROTTLING VENTURI VALVE

Bryan Samuelsen, and Alfred A. Liebman, both of Woodland Hills, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 30, 1973, Ser. No. 355,389
Int. Cl. B63h *11/00;* **B64d** *33/04*
U.S. Cl. 239—265.11 **8 Claims**



1. A throttling venturi valve apparatus for metering gaseous fluids therethrough comprising:

a housing, said housing forming a mixing chamber, throat portion, and a nozzle portion at a first end of said housing; a movable pintle positioned upstream of said throat portion in said mixing chamber, said pintle having a stem portion;

conduit means connected to said housing to direct said gaseous fluid into said mixing chamber;

driver means connected to said stem portion of said movable pintle to move said pintle axially into and out of said throat portion, thereby closing down or opening up the passage between said pintle and said throat portion;

temperature and pressure sensing means in said conduit to monitor gaseous fluid upstream of said throttling venturi valve;

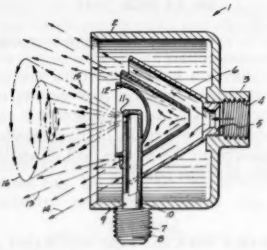
computer means linked to said temperature and pressure sensing means in said conduit, said computer being additionally linked to said driver means to cause said driver means to move said pintle dependent upon the temperature and pressure of said upstream gaseous fluid, thereby regulating the flow of gaseous fluids through said venturi valve; and

feedback means linked between said movable pintle and said computer means to monitor the axial position of said pintle.

3,848,807
CONFINING NOZZLE FOR SPRAY GUN

Pedro Partida, 335A 10th St., San Francisco, Calif. 94103

Filed Dec. 10, 1973, Ser. No. 423,202
Int. Cl. B05b 1/28
U.S. Cl. 239—290 4 Claims

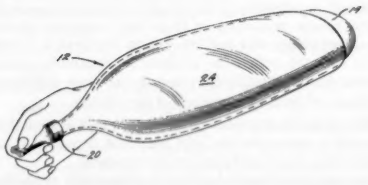


1. A nozzle for a fluid spray gun comprising:
a housing of generally hollow cylindrical configuration having an open end;
an orifice positioned concentrically within said housing and disposed for emission of a stream of fluid out of the open end of said housing;
means for connecting said orifice to a source of fluid under pressure;
a conical air supply member positioned concentrically within said housing;
means for connecting said air supply member to the outlet of an air spray gun;
said member comprising two separate concentric conical air conduits disposed for emitting a first inner air stream and a second outer air stream axially through said open end of housing,
said streams being concentric with each other and having a generally circular cross-sectional configuration;
said first inner air stream being disposed to impinge upon said fluid stream thereby effecting atomization of said fluid stream;
said second outer stream being disposed to produce an air screen around said first stream thereby confining said first stream to a predetermined area.

3,848,808
WATER SQUIRT TOY WITH PROTECTIVE SLEEVE

Warren Newton Fetty, Altadena; Richard Parke Knerr, Arcadia; Richard Lee Gillespie, San Gabriel, and Pierre Andre Bettencourt, Duarte, all of Calif., assignors to Wham-O Manufacturing Company, San Gabriel, Calif.

Filed May 31, 1973, Ser. No. 365,537
Int. Cl. B65d 1/32; B67d 5/08; A63h 33/00
U.S. Cl. 239—327 16 Claims

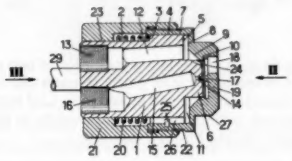


1. A water squirt toy comprising:
a hollow elongated tube made of a resiliently deformable material and having a closed end and an open end,
adapter means for attachment to a source of water under pressure, the adapter means being arranged to receive the open end of the tube at a mating, water flow conducting relationship so the tube can be filled to an expanded condition with water from the water source, and
a protective sleeve disposed around the exterior of the tube to contain the force of any possible bursting of the tube.

3,848,809
ATOMIZERS

Andre Hennequin, Argancy, France, assignor to Societe des Aciers Fins de l'Est, Boulogne-Billancourt, France

Filed Apr. 16, 1973, Ser. No. 351,355
Claims priority, application France, May 8, 1972, 72.16413
Int. Cl. B05b 1/32
U.S. Cl. 239—412 10 Claims



1. A liquid-gas emulsion atomizer comprising a body member having respective feed conduits for conducting pressurized gas and pressurized liquid to one end of said body member to be emulsified, said liquid feed conduit terminating at said one end of said body member in an axial passage; an external closure casing slidingly supported on said body member having an end wall structure including a needle valve disposed to enter said axial passage and ensure closure of said axial passage, means cooperating with said one end of said body member to define a gas chamber communicating with said gas feed conduit and a gas passage leading from said gas chamber, and also having a series of annularly spaced outlet passages; resilient means interposed between said body member and said closure casing normally biasing said closure casing axially in a direction to ensure the closure of said axial passage against the pressurized liquid and closure of said gas passage; restricted passage means interconnecting said gas chamber through said annularly spaced outlet passages to the atmosphere, said passage means being operative upon delivery of pressurized gas to said gas feed conduits to establish a progressively increasing pressure in said gas chamber effective to overcome the biasing force of said resilient means and shift said closure casing axially in the opposite direction opening said axial passage and said gas passage leading from said gas chamber thereby establishing a mixing and emulsification of the issuing liquid and gas and the discharge of the resulting emulsion from said annularly spaced outlet passages.

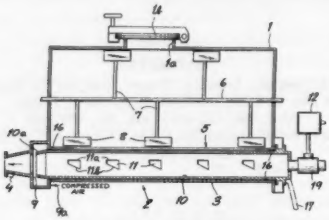
3,848,810
CONCRETE-DISPLACEMENT APPARATUS

Roland Geisler, Gelsenkirchen, and Wilhelm Konig, Haltern-Holtwick, both of Germany, assignors to Neuhausser KG, Lunen and Bergwerksverband GmbH, Essen, both of, Germany

Filed Aug. 24, 1973, Ser. No. 391,511
Claims priority, application Germany, Aug. 26, 1972, 2242060
Int. Cl. A47f 1/03
U.S. Cl. 239—417.3 15 Claims

1. A concrete-spray machine comprising a mixing vessel provided at its bottom with a window; a feed pipe underlying said vessel and communicating therewith through said window; a metering tube rotatable in said feed pipe and having at least one opening formed in the wall of the metering tube

registerable with said window upon angularly displacement of said tube relative to said pipe; means at one end of said pipe for discharging pneumatically entrained concrete therefrom; means for supplying compressed air to the other end of said pipe for passage through said tube and entrainment of concrete passing through said window toward said one end; and a bypass duct extending at least partly through said tube and receiving air from said other end of said pipe, said bypass duct being formed with outlets inclined downwardly in the direction of flow of concrete through said tube.

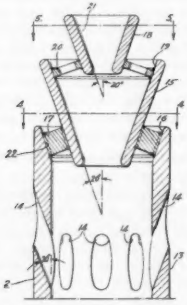


3,848,811

DEVICE FOR INJECTING A FLUID INTO A FLUIDIZED BED OF PARTICULATE MATERIAL

Melbourne G. Fryback, Wallingford, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Dec. 19, 1973, Ser. No. 426,300
Int. Cl. B01d *53/34;* **B01j** *1/00;* **B05b** *1/00*
U.S. Cl. 239—552 **6 Claims**



1. A nozzle for contacting a fluid with a finely divided solid in fluidized condition comprising

a. a cylindrical member having a plurality of circumferentially spaced holes in its walls, the axis of each hole forming an acute angle with the axis of the cylindrical member with respect to the direction of movement of the fluid;

b. a frusto-conical member attached to the cylindrical member with the small cross-sectional area facing the cross-sectional face of the cylindrical member and defining a first annular space between the walls of the first frusto-conical member and the wall of the cylindrical member, the axis of revolution of said annular space forming an acute angle with the axis of the cylindrical member with respect to the direction of flow and

c. a connecting member spanning the first annular space whereby the first frusto-conical member is attached to the cylindrical member and defining a plurality of circumferentially spaced apertures in the first annular space.

3,848,812

PROCESS FOR EXTRACTING PROTEIN FROM MICROORGANISMS

Hakan Lars Mogren, Solna; Gudmund Oscar Hedenskog, Stockholm, and Lennart Eugen Enebo, Ektorp, all of Sweden, assignors to SCP-Exploatering AB, Solna, Sweden

Filed Feb. 26, 1973, Ser. No. 336,148
Int. Cl. B02c *19/12*
U.S. Cl. 241—2 **13 Claims**

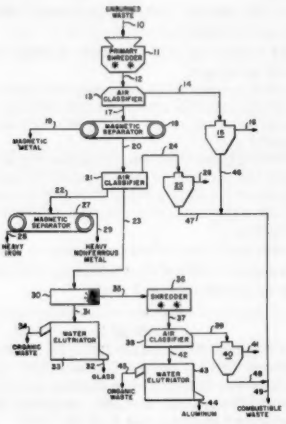
1. A process for extracting protein from microorganisms, to obtain a protein concentrate having a low nucleic acid content comprising producing a suspension of the microorganisms, exposing said suspension to a cell wall disintegration treatment, adjusting the pH of the suspension to a value higher than 6, increasing the temperature of the suspension to more than 30°C to precipitate the protein, and separating the precipitated protein from the liquid.

3,848,813

CONTINUOUS PROCESS FOR MECHANICALLY SEPARATING MATERIALS CONTAINED IN URBAN REFUSE

Martin H. Stanczyk, Marlboro; Paul M. Sullivan, Riverdale, and Max J. Spendlove, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 9, 1973, Ser. No. 339,687
Int. Cl. B02c *19/00*
U.S. Cl. 241—19 **13 Claims**



1. A process for the treatment of unburned urban refuse to separate and recover components thereof which comprises:

a. shredding the refuse by subjecting it to a flailing action sufficient in intensity to physically liberate components of the refuse contained in bags and boxes, to shatter glass containers and bottles and to perform a tearing action on the refuse to produce a relatively coarse product but of insufficient intensity to cause folding or balling up of tin cans contained in the refuse;

b. discharging the shredded product into a first pneumatic separation zone wherein light pieces of shredded refuse comprising paper and plastics are removed;

c. subjecting the shredded refuse to a magnetic separation wherein a ferrous metal fraction comprising tin cans is removed;

d. passing the refuse to an air classification zone and separating said portion into three fractions, a heavy fraction comprising massive metals, an intermediate fraction com-

prising glass, aluminum and heavy organic materials and a light fraction comprising paper and plastics;

e. assorting the intermediate fraction by size to recover a small particle size fraction comprising glass and a large particle size fraction;

f. comminuting the large particle size fraction and passing the comminuted product to a second pneumatic separation zone, and

g. recovering from the second pneumatic separation zone a light fraction comprising paper and plastics and a heavy fraction comprising aluminum.

3,848,814

PULP GRINDER

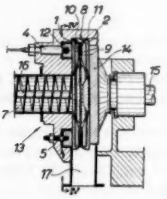
Ahti Syrjanen, Valkeakoski, Finland, assignor to Yhtyneet Paperitehtaat Oy Jylhavaara, Valkleakoski, Finland

Filed Aug. 23, 1972, Ser. No. 283,230

Claims priority, application Finland, Aug. 27, 1971, 2397/71

Int. Cl. B02c *7/06, 7/14*

U.S. Cl. 241—37 **2 Claims**



1. Improvement in a pulp grinder for cellulose, paper or other equivalent pulp and comprising at least one non-rotating blade disk and at least one rotating blade disk which have grinding surfaces facing each other, the non-rotating blade disk being secured to the body of the grinder by means of three fixing pins, said fixing pins being adapted to contact the non-rotating blade disk and deflect the latter so that the grinding surfaces are adjustable to be parallel, wherein the improvement comprises in that at least one fixing pin includes means for heating said pin so as to be variable in length.

3,848,815

GRANULATING APPARATUS

James H. Carpenter, Jr., and Bernard W. Ixer, Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed May 17, 1972, Ser. No. 254,279

Int. Cl. B02c *21/00, 17/02;* **B24c** *3/30*

U.S. Cl. 241—74 **3 Claims**

1. Apparatus for granulating lumps of material comprising:

a. a drum supported for rotation about a substantially horizontal axis, said drum having an inner surface and a plurality of apertures for providing passage ways for granulated material and abrasive particles therethrough;

b. means for feeding lumps of material into an inlet end of said drum;

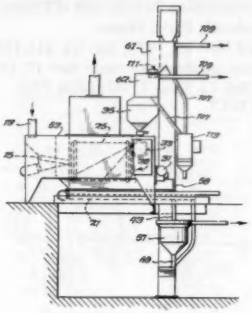
c. a spiral screw connected to the inner surface of said drum;

d. means for projecting a stream of abrasive particles with sufficient force for granulating the lumps of material within the drum, said projecting means being positioned at an outlet end of said drum and above the axis of rotation of said drum;

e. means for rotating said drum for moving the lumps of material against the force of the projecting stream of abrasive particles whereby granulated material and spent abrasive particles pass through the apertures in said drum; and

f. a separator for removing the granulated material from the spent abrasive particles;

g. said spiral screw including a first section near the inlet end and a second section near the outlet end of said drum, said first section projecting into the interior of the



drum a greater distance than said second section projects into the interior of the drum so that lumps of molded sand tend to be pushed over said second section by the force of abrasive particles and hled in said drum until completely granulated.

3,848,816

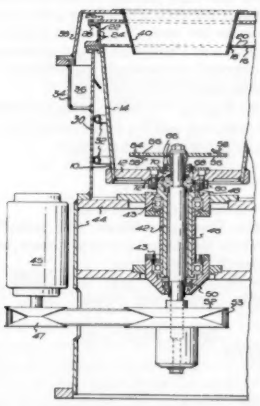
MILLING MACHINES

Douglas Morley, Halifax, England, assignor to August's Limited, Halifax, Yorkshire, England

Filed May 21, 1973, Ser. No. 362,227

Int. Cl. B02c *17/16, 18/12*

U.S. Cl. 241—74 **5 Claims**



1. Milling apparatus comprising a rotatable bowl which has a base and side wall means and which is for holding a quantity of fluent material to be milled and a plurality of milling elements, a rotatable mixing member mounted in the bowl, a drive shaft means which extends through the base of the bowl and which is drivingly connected to the mixing member, a prime mover, and transmission means operatively coupling the prime mover and the drive shaft means and the prime mover and the bowl whereby the mixing member selectively can be driven independently of the bowl for the milling operation, and the bowl can be rotated by the prime mover to

centrifugally discharge the milled substance from the top of the bowl.

3,848,817

SELF-PROPELLED CRUSHER UNIT

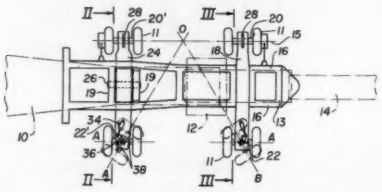
Christian Vaillant, Douchy Les Mines, and Jean Pierre Menissez, Wavrechain Sous Denain, both of France, assignors to Fives-Cail Babcock, Paris, France

Filed Nov. 15, 1973, Ser. No. 416,199

Claims priority, application France Nov. 17, 1972, 72.40859

Int. Cl. B02c *21/02*; **B62d** *7/08*

U.S. Cl. 241—101.7 **6 Claims**



1. In a self-propelled crusher unit comprising a chassis, wheels with pneumatic tires supporting the chassis, a crusher carried by the chassis, a feed assembly for delivering material to the crusher and a recovery conveyor for removing the crushed material from the crusher, the feed assembly and recovery conveyor defining a longitudinal axis of the unit:

1. four axles supporting the chassis,
   a. two of the axles having axes disposed in a common vertical plane and being fixed in respect of the longitudinal axis, and
   b. two of the axles being orientable about vertical axes in respect of the longitudinal axis,
2. abutments arranged on the chassis for limiting the rotation of the orientable axles between a first position wherein these axles are parallel to the common vertical plane containing the axes of the fixed axles and a second position wherein the axes of the orientable axles bear upon a vertical axis contained in the common vertical plane and disposed substantially equidistantly between the fixed axles, and
3. means for moving the orientable axles between the first and second positions, and for maintaining the orientable axles in a selected one of said positions.

3,848,818

MOBILE CRUSHER UNIT

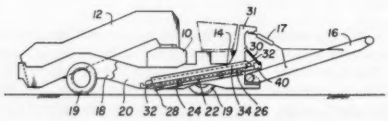
Christian Vaillant, Douchy-les-Mines, and Jean-Pierre Menissez, Wavrechain sous Denain, both of France, assignors to Fives-Cail Babcock, Paris, France

Filed Dec. 12, 1973, Ser. No. 423,899

Claims priority, application France, Dec. 12, 1972, 72.44120

Int. Cl. B02c *21/02*

U.S. Cl. 241—101.7 **5 Claims**



1. A mobile crusher unit comprising

1. a chassis including

a. two transversely braced longitudinal beams each having an inwardly facing side,

2. a crusher mounted on the chassis for crushing material,

3. a recovery conveyor means for the recovery of crushed material from the crusher, the recovery conveyor means being disposed between the longitudinal beams and including

a. a frame and

b. a recovery conveyor supported on the frame,

4. two rails affixed to the inwardly facing sides of the longitudinal beams,

5. rollers supporting the recovery conveyor means frame on the rails and permitting the frame to be displaced longitudinally along the rails between the longitudinal beams for disassembling the recovery conveyor means from the unit, and

6. immobile means for holding the recovery conveyor means in a desired position on the chassis of the unit.

3,848,819

TOROIDAL COIL WINDING MACHINE

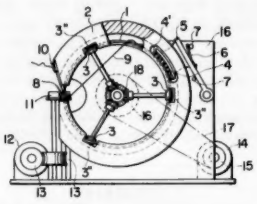
Yasuo Fukushima, Saitama, Japan, assignor to Toko Inc., Tokyo, Japan

Filed Feb. 8, 1973, Ser. No. 330,521

Claims priority, application Japan, Feb. 8, 1972, 47-13278

Int. Cl. H01f *41/08*

U.S. Cl. 242—4 B **9 Claims**



1. A winding machine for helically winding a wire on a toroidal core, comprising:

a C-shaped ring formed with a hole, through which the wire is fed, and rotatable to pass through the bore of the toroidal core together with the wire passing through the hole thereof;

a C-shaped ring holder formed with an annular track for holding and guiding therethrough said C-shaped ring, said ring holder furthermore having an annular groove extending radially outward of said annular track for permitting the wire to freely pass therethrough, said ring holder including rotating means disposed facing said annular track for rotating said C-shaped ring, and braking means disposed radially outward of said annular track for applying a frictional force to the wire rotating together with said C-shaped ring when the hole in said C-shaped ring is adjacent to said braking means;

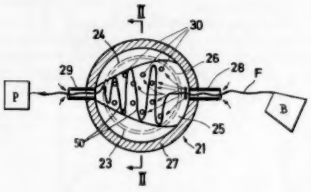
core rotating means disposed adjacent to the ends of said ring holder for supporting the toroidal core in position and for rotating the same in synchronism with the rotation of said C-shaped ring; and

retaining means for retaining the free end of the wire when it is fed to be wound on the toroidal core.

3,848,820
METHOD AND APPARATUS FOR HANDLING A YARN DRAWN AT A HIGH SPEED FROM A BOBBIN BY A PROCESSING MACHINE

Hans Stutz, Sommerau 171, 8623 Kempten, Switzerland, and Josef Huber, Muelhausen, France, assignors to said Stutz, by said Huber

Filed Nov. 17, 1972, Ser. No. 307,598
Claims priority, application Switzerland, Nov. 24, 1971, 17107/71; Apr. 12, 1972, 5347/72
Int. Cl. B65h *54/22*
U.S. Cl. 242—18 R **12 Claims**



1. A method of withdrawing yarn from a bobbin at high speeds by means of a processing machine, comprising the steps of:

A. providing a yarn storage compartment having a yarn inlet, yarn outlet and an air outlet therebetween, the air outlet communicating with a vacuum producing device, the storage compartment having a dimensional extent in one direction greater than once but less than twice the thickness of the yarn intended to be handled by the storage compartment;

B. maintaining a vacuum in the yarn storage compartment and generating an air flow into the yarn storage compartment via the yarn inlet and yarn outlet and removing the air entering by the vacuum producing device through the air outlet;

C. removing yarn from the bobbin via the generated air flow acting on the yarn entering the storage compartment; and

D. automatically regulating the quantity of yarn being stored in the storage compartment by varying the degree of vacuum in the yarn storage compartment by the volume and/or quantity of the stored yarn, and hence, the quantity and/or velocity of air entering the storage compartment whereby the stored yarn is maintained in a loosened condition permitting ready removal by the yarn processing machine without entanglements, twist, and free of balloons.

3,848,821
SPACE-SAVING STORAGE OF FLEXIBLE SHEETS

Henning W. Scheel, Ernst-August-Str. 18, 2 Hamburg 52, Germany

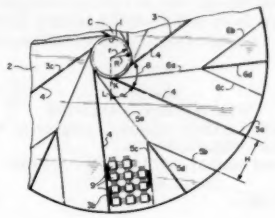
Filed Aug. 28, 1972, Ser. No. 283,961
Claims priority, application Germany, Nov. 17, 1972, 2144034
Int. Cl. B65h *45/02*
U.S. Cl. 242—55 **10 Claims**

1. Apparatus for storing on a hub an annular sheet in folded condition and for deploying it into extended position, comprising:

a. a hub of diameter which is small as compared with the diameter of the sheet when extended and the hub having an axis;

b. a sheet made of thin flexible material fixed in the vicinity of its center to the hub such that when the sheet is in extended position it lies substantially normal to said axis of the hub;

c. the sheet having multiple predetermined sharply-defined bend lines about which the sheet is pleated by folding the sheet in one axial direction at multiple major bend lines uniformly spaced about the sheet and then folding the sheet oppositely at intermediate bend lines bisecting the angle between adjacent major bend lines, the folds being made in such a way that at each bend line only the sheet material contiguous thereto is folded upon itself, said major bend lines each extending from the hub as a substantially straight line which is tangent to an imaginary



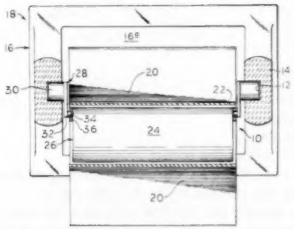
coaxial cylinder located within the hub and of slightly smaller diameter and selected such that extensions of adjacent major bend lines would intersect at common points lying near the surface of the hub; and

d. the pleated sheet having sufficient memory of said sharply defined bend lines to assume said folded condition when rolled onto said hub.

3,848,822
DISPENSING DEVICE

Philip Boone, 15 Fenwick Rd., Winchester, Mass. 01890

Filed June 4, 1973, Ser. No. 366,679
Int. Cl. A47k *10/22*
U.S. Cl. 242—55.2 **21 Claims**



1. A roll-supporting, storage and dispensing device for attachment to support members of a conventional roll-type paper or the like dispenser, said device being adapted to serve in place of the usual roll-supporting means and comprising:

a hollow cylindrical drum-like element forming therewithin a storage and dispensing chamber and being adapted to slidable mounting thereon of the core of a roll of said paper so as to allow free rotation of the latter, said drum-like element having at least one end-portion including aperture means formed therein permitting ready access to material contained within the interior area of said element and the removal at will of said material from said area through said end portion;

a pair of engaging means integral with given portions of said drum-like element at least one of which is radially offset from the longitudinal axis of said element so as to be adjacent to and integral with a peripheral end portion thereof;

a pair of mounting elements for releasably supporting said drum-like element, each of said mounting elements being

attached at one end portion to said dispenser support members and at an other end portion being so formed as to releasably engage said engaging means of the drum-like element, said radially-offset engaging means of the drum-like element and said other formed end portion of the mounting element when engaged therewith being so disposed transversely to the side of said end-portion of the drum-like element embodying said aperture means as to permit unrestricted access thereto and ready removal of material through that end of the drum-like element, and means fixing said drum-like element against movement during removal of said paper and material.

3,848,823

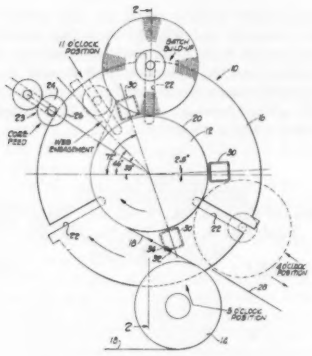
WEB WINDING MACHINE

Derek Mitchell, Larkhall, Scotland, assignor to Proctor & Schwartz, Inc., Philadelphia, Pa.

Filed Sept. 17, 1973, Ser. No. 398,010

Int. Cl. B65h *19/20*

U.S. Cl. 242—56 A **10 Claims**



1. A machine for winding a flexible web onto consecutive spears comprising:

a batcher roller;

means for rotating the roller;

means for supporting a spear in contiguous parallel relationship with the surface of the batcher roller;

means for guiding the flexible web onto the surface of the roller whereby the web engages the roller at a point removed from the spear;

the spear and the batcher roller defining a nip through which the web passes so that rotation of the batcher roller causes rotation of the spear and winding of the web on the spear;

a carrier cutter;

means for orbiting said cutter about the surface of the batcher roller, the cutter including means to engage the web at a first position remote from said nip prior to engagement of the web with the batcher roller and to release the web at a second position adjacent said nip, the carrier cutter having an electrical heating element adapted to engage the web and to cut the web across the width thereof during movement of the cutter between said positions;

a feeding station adjacent said nip for introducing successive spears into contiguous relationship with the batcher roller, the movement of the carrier cutter being in timed relationhip with the feed of successive spears so that the cutter remains in engagement with the web past the feeding station releasing the web on engagement of the web by a newly introduced spear.

3,848,824

FOIL COILING MACHINE

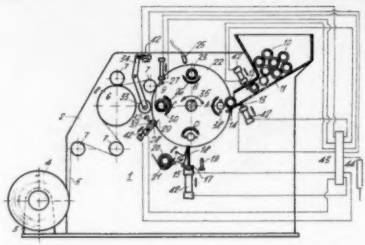
Marinus Johannes Van Schijndel, Utrecht, Netherlands, assignor to Hunter Douglas International N.V., Willemstad, Curacao, Netherlands

Filed Jan. 12, 1973, Ser. No. 323,296

Claims priority, application Netherlands, Jan. 15, 1972, 7200619

Int. Cl. B65h *19/20*

U.S. Cl. 242—56 A **6 Claims**



1. An apparatus for coiling sheet material on a core from a supply of such material comprising means for supporting a core including at least one pair of axially aligned spindles, means for moving said spindles axially into and out of engagement with opposite ends of said core, means for rotating said spindles about their aligned axes when engaged with said core, rotating means for supporting and moving said spindles about an axis other then their aligned axes to at least two stations, said rotating means holding said spindles at each of said stations for a time before moving said spindles to the next succeeding station, two of said stations being coiling stations, an arcuate plate supported by said rotating means adjacent to and spaced from a core on said spindles, an inner guiding surface on said plate for guiding the end of a sheet about said core, means at one of said stations movable into and out of cooperation with said arcuate plate to extend the guiding surface of said arcuate plate to assist in guiding said sheet about said core to initiate the coiling thereof, said means for rotating said spindles operating at said first station to coil sheet material on said core to less than completion, said means for rotating said spindles completing the coiling of said sheet material onto said core at said second station, cut-off means adjacent said first station for cutting off the sheet of material being wound, and means at said second station to discharge said fully wound core.

3,848,825

SEMI-AUTOMATIC CASSETTE LOADER

Darrell W. Zielke, Valencia, Calif., assignor to Superscope, Inc., Sun Valley, Calif.

Filed May 21, 1973, Ser. No. 361,978

Int. Cl. B65h *19/20*

U.S. Cl. 242—56 R **29 Claims**

1. In a machine for loading a tape cassette having a leader attached to two reels of the cassette and adapted to be drawn out as a loop, said machine having means for holding a supply roll of tape in a supply station, means for holding a cassette to be loaded in a loading station, and means for feeding tape along a predetermined path from said supply station to said loading station through an intermediate splicing station, including means for driving one reel of the cassette in the loading station, an improved cutting-and-splicing apparatus comprising:

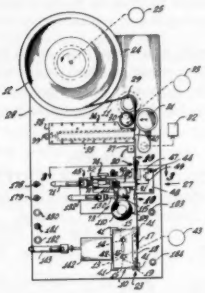
two positioning members mounted in side-by-side relation in said splicing station on one side of said path on opposite sides of a transverse plane through said path, and

relatively movable along said plane between first and second displaced operating conditions, said first member being on the side of said plane closest to said supply station;

first and second holding grooves formed in said first and second member, respectively, in the sides thereof adjacent said path, and aligned with said path in said first opeating condition to receive one side portion of the loop from the cassette, said holding grooves being displaced from eith other, parallel to said path, in said second operating condition;

blade mounting means on the front side of said head adjacent said path and movable relative to said head between blade-extending and blade-retracting positions, for supporting a blade for movement along said plane;

means operable as an incident to the reciprocation of said head to convert the head alternately to a cutting head in which the blade is extended at the end of a forward stroke, and to a splicing head in which the blade is held



retracted at the end of a forward stroke, thereby producing alternating cutting strokes and intervening splicing strokes;

means for supplying strips of splicing material to the front side of said head during said splicing strokes, in alignment with said path across said plane, for application of the splicing material across said plane to the tape and leader lying on said path;

and control means for operating said machine to cut the leader in said first and second grooves along said plane, align the tape from the supply roll with said second groove, apply a strip of splicing material to join the leader and the tape across said plane, wind a selected length of tape into the cassette along said third and second grooves, sever the tape across said plane, align said first and third grooves along said path, apply a second strip of splicing material across said plane, and wind the remaining tape and leader material into the cassette.

3,848,826

CONTINUOUS WEB WINDING APPARATUS

Gerhard Voswinckel, Aachen, Germany, assignor to H. Krantz, Aachen, Germany

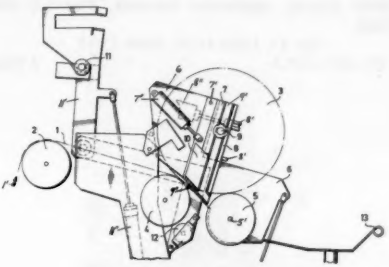
Filed June 6, 1972, Ser. No. 260,109

Claims priority, application Germany, June 14, 1971, 2129410

Int. Cl. B65h *17/08*

U.S. Cl. 242—66 **15 Claims**

1. In a continuous web winding apparatus wherein a first drive roller rotates a winding roller in a starting position, wherein a second drive roller is arranged for rotating the winding roller in cooperation with the first drive roller while the winding roller is in an intermediate position, and wherein the second drive roller rotates the winding roller while the latter is in an end position, the improvement comprising guide means for said winding roller positioned adjacent the ends of said rollers, journal means on the axis of said second roller and operatively connected to said guide means, and actuating



means arranged for cooperation with said journal means for tilting said guide means back and forth about the axis of said second drive roller whereby the winding roller is transferred from said intermediate position to said end position.

3,848,827

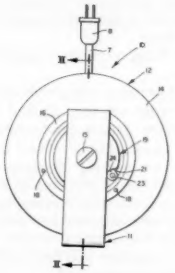
MAGNETIC ROTARY LOCKING AND RELEASE MECHANISM

Bernard J. Tamarin, The Philadelphian, 1C 41, 2401 Pennsylvania Ave., Philadelphia, Pa.

Filed Oct. 3, 1973, Ser. No. 402,993

Int. Cl. B65b *75/48*

U.S. Cl. 242—107.7 **12 Claims**



1. In locking and release means having ratchet mechanism useful in a cord reel or similar rotary device with an unwinding direction and a winding direction, the combination of a gear having segmented and desegmented portions and a pivotable pawl engageable with such segmented portion, one of these two mutually engageable members being magnetized and the other attracted theretoward by the resulting magnetic field for engagement therewith, the pawl being adapted to be in ratcheting engagement with the segmented portion when adjacent thereto during rotation in the unwinding direction and adapted to remain within the magnetic field and occupy a position of minimum separation from such desegmented portion when adjacent the latter and further adapted to be deflected in the opposite direction therefrom into sliding non-ratcheting contact with the segmented portion of the gear in the winding direction.

3,848,828
ENERGY TRANSFORMER FOR SECURING A SAFETY BELT ON A SEAT OF A VEHICLE

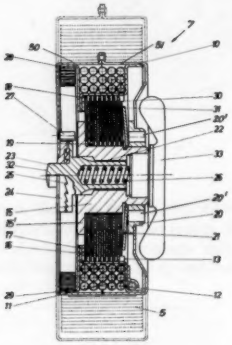
Hans Kuhl, Kornbergweg 12, Plochingen, Germany

Continuation of Ser. No. 823,677, May 12, 1969, abandoned. This application Feb. 18, 1972, Ser. No. 227,378

Claims priority, application Germany, May 13, 1968, 1755464

Int. Cl. A62b *35/00*; **B65h** *75/48*

U.S. Cl. 242—107.3 **3 Claims**



1. In combination with a safety belt, an energy transformer securing a safety belt selectively to a seat of a vehicle and to a vehicle itself, comprising

a housing,

a drum rotatably mounted and in said housing having a recess,

belt means wound on said drum,

said drum having a central bore,

a hub disposed in said recess,

a laminated friction brake including inner plates and outer plates, disposed parallel to and adjacent each other,

said outer plates being secured to said drum for joint rotation with the latter,

said inner plates being secured to said hub for joint rotation with the latter,

spring means for pressing said plates against each other,

means for varying the pressure applied to said plates,

a coupling member axially displaceable relative to and disposed in the central bore of said hub,

a disc having a first gearing disposed coaxially with said coupling member and connected with said housing,

a second gearing provided on one end face of said coupling member engageable with said first gearing, and releasable therefrom upon displacement of said coupling member,

spring means for retaining said first gearing in engagement with said second gearing, and

said coupling member forming jointly with said disc an overrunning clutch to permit rotation of said drum jointly with said inner plates connected with said housing.

3,848,829
GUIDE MEANS FOR YARN HANDLING APPARATUS

Walter D. Womer, Greenville, S.C., assignor to Phillips Fibers Corporation, Greenville, S.C.

Filed Dec. 29, 1972, Ser. No. 319,521

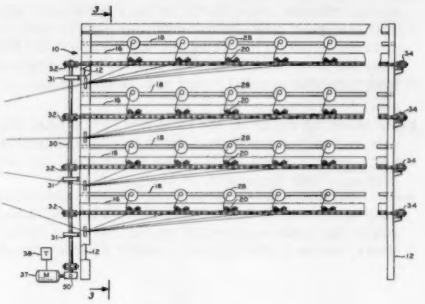
Int. Cl. B65h *49/02*, *57/00*

U.S. Cl. 242—131 **12 Claims**

1. In a yarn handling apparatus comprising a frame, at least one yarn package mounted on said frame, and at least one guide means mounted on said frame for receiving yarn from said yarn package and guiding same during further handling thereof, the improvements comprising:

rotatably mounting said guide means on said frame; and

providing means operatively connected to said yarn guide means for rotating said guide means in one of a first mode



(a) continuously at a timed rate, and a second mode (b) intermittently at predetermined timed intervals, in accordance with the wear rate of said guide means during the time said yarn handling apparatus is in operation.

3,848,830
MISSILE GUIDANCE SYSTEM

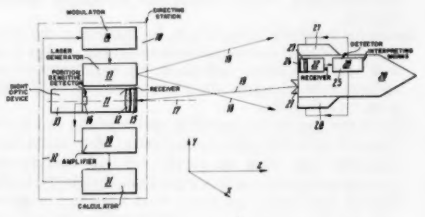
Gunthard Born, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Nov. 16, 1972, Ser. No. 307,236

Claims priority, application Germany, Nov. 20, 1971, 2157672

Int. Cl. F41g *5/08*, *7/14*, *9/00*

U.S. Cl. 244—3.16 **6 Claims**



1. A missile guidance system, comprising:

a transmitting station having means defining a laser adapted to transmit a guidance electromagnetic radiation signal to a zone spaced from said transmitting station;

means comprising a missile and propulsion means for propelling said missile to and into said zone, said missile means including guidance signal receiving means responsive to said guidance signal for controlling the movement of said missile while in said zone;

means comprising a source of a location electromagnetic radiation signal on said missile means which is adapted to transmit same rearwardly thereof;

a receiving station located adjacent said transmitting station and having means defining a location electromagnetic radiation signal receiver for said location electromagnetic radiation signal from said missile, said location electromagnetic radiation signal receiver means including means for locating said missile means in said zone and producing said guidance signal in response to said location electromagnetic radiation signal.

3,848,831
FUSELAGE FLAPS FOR AN AIRCRAFT

Milford Geary, Box 26, Polo, Ill. 61064

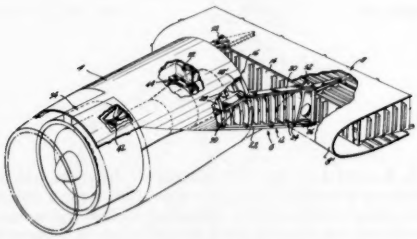
Continuation-in-part of Ser. No. 188,626, Oct. 12, 1971, abandoned, which is a division of Ser. No. 10,331, Feb. 11, 1970, Pat. No. 3,680,814. This application Oct. 23, 1973, Ser. No. 408,752
Int. Cl. B64c *3/00, 9/32*
U.S. Cl. 244—45 R 4 Claims

1. Control apparatus for an aircraft having a fuselage, said control apparatus comprising a first flap located on a laterally facing side of the fuselage and positioned rearwardly of the longitudinal center of gravity of the aircraft, means mounting said flap on said fuselage for downward swinging from a retracted position to an extended position about an axis which is inclined upwardly and rearwardly relative to the longitudinal axis of said fuselage, a second flap located on said side of said fuselage and positioned between said first flap and said center of gravity, means mounting said second flap on said fuselage for downward swinging from a retracted position to an extended position about an axis extending generally parallel to the longitudinal axis of said fuselage, each of said flaps conforming substantially to the configuration of said fuselage when in its retracted position and projecting outwardly from said side of said fuselage when in its extended position, said second flap being located to channel air to said first flap when said flaps are in said extended positions, and mechanism connected between said flaps and said fuselage and selectively operable to swing said flaps between said positions.

3,848,832
AIRCRAFT ENGINE INSTALLATION

Michael Richard Stanley, Federal Way, and Lucas James Kimes, Seattle, both of Wash., assignors to The Boeing company, Seattle, Wash.

Filed Mar. 9, 1973, Ser. No. 339,646
Int. Cl. B64d *27/00*
U.S. Cl. 244—54 13 Claims

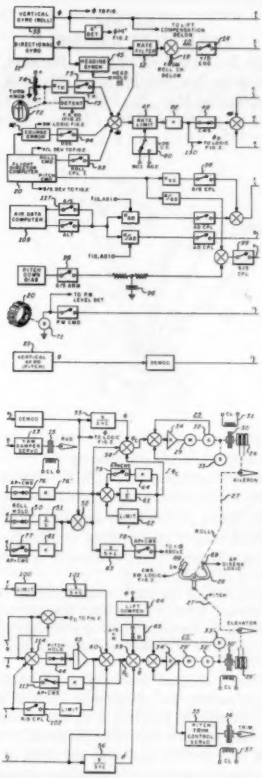


1. In combination, a winged aircraft having an A-frame-like strut cantilevered forward from the leading edge structure of each wing thereof, said strut comprising a pair of forwardly cantilevered beams and an inverted U-shaped transom interconnecting the forward end portions of the beams, and an engine for the aircraft suspended from the transom portion of the strut within the inside concave recess of the transom.

3,848,833
AIRCRAFT AUTOMATIC FLIGHT CONTROL SYSTEM

Paul A. Rauschelbach, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 14, 1972, Ser. No. 271,867
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 D 18 Claims



1. An automatic flight control system for an aircraft having the usual manual control wheel and control mechanism between it and the craft control surface for controlling the attitude of the craft in accordance with movement of said control wheel, the combination comprising

an automatic pilot servomotor system having a servomotor, an output member connected with said control mechanism, and clutch means adapted when engaged to move said control mechanism and control surface in accordance with movement of said servomotor and when disengaged to permit free movement of said control mechanism and control surface by said control column,

automatic flight control means including stable attitude reference and flight path control means for controlling said servomotor system when engaged to automatically control said control surfaces to automatically maintain said craft attitude and flight path,

control wheel steering means for said automatic flight control system including switch means actuable by the human pilot for disengaging said servomotor clutch means during actuation of said switch means whereby the human pilot may alter said attitude and flight path through said manual control mechanism, and

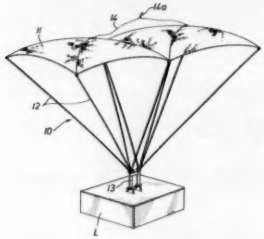
logic means responsive to actuation of said switch means for synchronizing said automatic flight control means to the attitude and flight path established by said human pilot through said manual control mechanism and upon deactuation of said switch means to re-engage said servomotor clutch means whereby said automatic flight control means thereafter controls said aircraft from said manually estalished attitude and flight path.

3,848,834

PARACHUTE ASSEMBLY

Sam B. Phillips, Jr., 9150 Gulf Freeway, Houston, Tex. 77017

Continuation of Ser. No. 763,762, Sept. 30, 1968, abandoned.
This application Mar. 22, 1971, Ser. No. 126,918
Int. Cl. B64d *17/06*
U.S. Cl. 244—145 **1 Claim**



1. A parachute assembly comprising:
a. a flat canopy having a top and a bottom surface;
b. a plurality of suspension lines secured to said canopy and extending below said bottom surface of said canopy;
c. deployment means for assisting in opening said canopy secured to said canopy and extending upwardly from said top surface of said canopy;
d. reinforcing means secured to said canopy with said reinforcing means further including attachment means for securing said suspension lines to said canopy;
e. first and second rectangular sections included in said canopy;
f. two centrally crossed webbing strips included in said reinforcing means and secured to each of said first and second rectangular sections with said crossed webbing strips in each section extending diagonally between each corner of said section and with the ends of each of said webbing strips including said attachment means for securing said suspension lines to said canopy; and
g. a deployment line included with said deployment means disposed above said top surface of said canopy and secured at spaced locations on said top surface of said canopy at the point of intersection of said webbing strips on each of said first and second rectangular sections, said webbing strips in each section being unsecured to said section for a portion of their lengths at the point of intersection of said webbing strips to form attachment means for said deployment line.

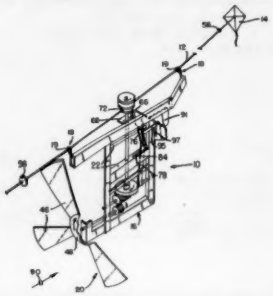
3,848,835

WIND TURBINE POWERED LINE SUSPENDED DEVICE

Walter P. Browning, 666 Devon State Rd., Devon, Pa. 19333, and William L. Dodge, 526 Panmure, Haverford, Pa. 19041

Filed May 9, 1973, Ser. No. 358,555
Int. Cl. B64c *31/06*
U.S. Cl. 244—155 R **16 Claims**

1. A wind turbine powered device adapted to be supported by and driven along a line such as having one end carried by an aeronautic device, comprising in combination:
a. a frame;
b. means for releasably supporting the frame from a line;
c. wind turbine means carried by the frame on a shaft having a fixed axis and including a generally unidirectional rotary power output means for at least frictionally drivingly



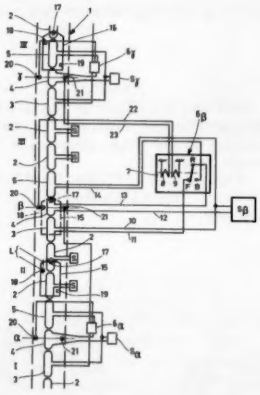
coacting with a line for driving the device along a supporting line; and
d. means responsive to a stop on a supporting line for automatically reversing the direction in which the device is driven along a supporting line.

3,848,836

CAR ACTUATED INDUCTIVE BLOCK CONTROL

Gunnar Alexius Wallgard, Huskvarna, and Lars-Gunnar Rinnfors, Jonkoping, both of Sweden, assignors to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Dec. 26, 1973, Ser. No. 428,130
Claims priority, application Sweden, Jan. 3, 1973, 7300053
Int. Cl. B61l *13/00*
U.S. Cl. 246—63 R **4 Claims**



1. A control system for a plurality of driverless vehicles which are intended to move in one direction along a defined path along which lengthwise elongated radiators are arranged end-to-end, each vehicle being moveable only in response to energization of a radiator to which it is adjacent, said path being divided into longitudinally adjacent blocks, each comprising a plurality of said radiators and each block intended to be occupied by only one vehicle at a time, the front end of one block being defined from the rear end of another longitudinally adjacent block by a boundary which a vehicle crosses is moving from said one block into said other block, said system being characterized by:

A. there being at each boundary a boundary radiator group comprising
1. a transition radiator which extends across the boundary and a short distance into each of the blocks adjoining the boundary,
2. an exit radiator longitudinally adjacent to the transition radiator in the front end portion of the block behind the boundary, and
3. an entry radiator longitudinally adjacent to the transition radiator in the rear end portion of the block ahead of the boundary;

B. a plurality of radiator energizing input units, one for each boundary, each connected with the transition radiator for its boundary to energize the same at any time;

C. a plurality of bistable switch devices, one for each boundary, each comprising
1. a pair of input terminals that are adapted to receive control signals alternately,
2. means responsive to a control signal applied to one of said input terminals to effect connection of the entry radiator for its boundary with the input unit for its boundary to the exclusion of the adjacent exit radiator, and
3. means responsive to a control signal applied to the other of said input terminals to effect connection of the exit radiator for its boundary with the input unit for its boundary to the exclusion of the adjacent entry radiator;

D. a plurality of vehicle passage detection means, one at each boundary, each of said detection means being responsive to passage of a vehicle across its boundary to produce a control signal; and

E. means connecting the vehicle passage detection means at each boundary
1. with said one input terminal of the bistable switch device for its boundary, so that the entry radiator directly in front of a vehicle at a boundary is energized simultaneously with disconnection of its adjacent exit radiator from the input unit for said boundary, and
2. with the other input terminal of the bistable switch device for the next boundary to the rear, so that an exit radiator can be energized in consequence of a vehicle clearing the block directly in front of that exit radiator.

3,848,837

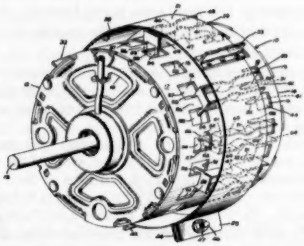
MOUNTING ADAPTER MEANS FOR DYNAMOELECTRIC MACHINE

Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 200,525, Nov. 19, 1971, Pat. No. 3,740,599. This application June 15, 1973, Ser. No. 370,302

Int. Cl. H02k *5/00*

U.S. Cl. 248—14 **10 Claims**



1. A mounting adapter for a dynamoelectric machine, said adapter comprising at least two laterally extending legs and at least two spaced apart resiliently movable depending elements having surfaces for engaging portions of a dynamoelectric machine stationary structure; said depending elements being spaced apart a predetermined distance to trap a predetermined portion of a dynamoelectric machine stationary surface therebetween; said at least two depending elements and at least two laterally extending legs being interconnected whereby the laterally extending legs may be held in a desired relationship to a dynamoelectric stationary surface trapped between said at least two depending elements.

3,848,838

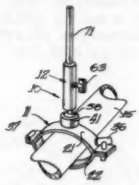
UMBRELLA MOUNTING BRACKET

Robert Lee Thomas, 402 W. 12th, Irving, Tex. 75060

Filed Nov. 8, 1973, Ser. No. 413,844

Int. Cl. F16m *13/02*

U.S. Cl. 248—42 **4 Claims**



1. A mounting bracket intended for the mounting of an umbrella on a lawn chair and the like to protect an individual sitting in the chair from the direct rays of the sun, the mounting bracket comprising a clamp member including a top member and a bottom member each formed of an elongated rectangular strip of material curvingly bent intermediate its opposite first and second end portions to define a longitudinally extending concave interior curved surface, the top and bottom members being placed with their interior surface in confronting relationship with each other, the first ends of the top and bottom members having a transversely extending slot in each of the ends and in general alignment with each other such that the slot in the top member end overlies the slot in the bottom member end, an elongated hollow cylindrical member extending in alignment with the axis of the slots normal to the longitudinal axis of the clamp, a side wall of the cylindrical member passing through the aligned slots to pivotally interconnect the top and bottom members together and permit swinging movement thereof about the axis of the cylindrical member toward and away from each other, fastening means associated with the second ends of each member for detachably attaching and detaching the ends together in a releasable manner, a cylindrical socket member disposed centrally on the exterior surface of the top member and projecting outwardly therefrom and terminating in an outermost top surface, a hemi-spherical recess disposed concentrically in the socket member and opening out of the top surface thereof, a spherical ball member of a size and configuration complementary to the diameter of the hemi-spherical recess and disposed therein and captured thereby for relative movement relative thereto, a portion of the spherical ball member projecting outwardly of the top surface of the socket member, a shaft connected to the projecting portion of the ball and extending radially outwardly therefrom, a support member having a top end and a bottom end, a bore disposed axially in the support member bottom end and extending thereinto of a diameter to receive the projecting end of the shaft from the ball member to mount the shaft therein with the ball member spaced a slight distance outwardly from the bottom end of the support member, an elongated cylindrical bore extending axially through the top portion of the support member and opening out of the top end thereof and adapted to receive the base end of an umbrella standard in a supporting manner

therein, a threaded aperture extending through the side wall of the support member normal to the axis of the support member and communicating with the bore at one end and with the exterior surface of the side wall with the other end, a bolt like fastener including an elongated threaded shank having one end threadedly received in the threaded aperture, an enlarged head portion formed integrally with the opposite end of the bolt fastener in the form of a flattened head portion of a generally elongated rectangular shape extending normal to the axis of the shank and adapted to be readily grasped between the fingers of an individual's hand to effect the rotation of the shank in opposite directions about its axis to move the innermost shank fastener end thereof into and out of engagement with an umbrella standard inserted into the cylindrical bore.

3,848,839

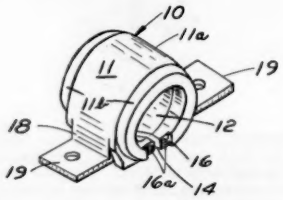
CONDUIT SUPPORT CLAMP

Gary P. Tillman, 1704 Dudley St., Erie, Pa.

Continuation-in-part of Ser. No. 220,624, Jan. 25, 1972, abandoned. This application Jan. 10, 1974, Ser. No. 432,280

Int. Cl. F16l *3/04*

U.S. Cl. 248—54 R **14 Claims**



1. A conduit support clamp for supporting an elongate conduit relative to a structure comprising

an elongate elastomeric body having a bore extending axially therethrough for receiving the conduit therein, said elastomeric body having a central portion for receiving the conduit in circumferentially spaced relation thereto and opposite end portions axially spaced from said central portion for receiving the conduit in frictionally engaging relation circumferentially thereof at axially spaced locations and forming the only interconnection of said elastomeric body with said conduit, and

rigid means carried by said central portion in spaced relation from said opposite end portions for substantially encircling the conduit and fixedly attaching said central portion in circumferentially spaced relation of the conduit to the structure for movement of said central portion with the structure relative to said opposite end portions in response to relative motion between the conduit and structure normal to the conduit, said relative motion being accommodated predominantly by shear in said elastomeric body between said central and opposite end portions.

3,848,840

PLASTIC CLAMPING RIDGED STRAP

Hideo Umezu, 17-17, Koishikawa 4-chome, Bunkyo-ku, Tokyo, Japan

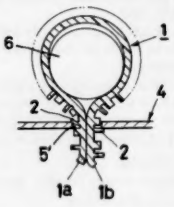
Filed Jan. 8, 1973, Ser. No. 321,849

Claims priority, application Japan, Jan. 8, 1972, 47-4451; Oct. 13, 1972, 47-101851; Oct. 13, 1972, 47-101852

Int. Cl. F16l *3/08*

U.S. Cl. 248—73 **11 Claims**

1. In combination, a ridged plastic clamping strap composed of an elongated plastic band having a plurality of alternately arranged tall flexible ridges and short rigid ridges intergrally connected to one surface of the elongated band, each tall ridge being nearer to one adjacent short ridge than to the other adjacent short ridge, thus leaving a space between the tall ridge and the other adjacent short ridge sufficient to allow the tall ridge to bend down but leaving a space between the



tall ridge and the one adjacent short ridge insufficient to allow the tall ridge to bend down; and a plate having at least one aperture which allows the short rigid ridges to pass without obstruction and allows the tall flexible ridges to pass only when yieldingly bent down.

3,848,841

REFUSE CONTAINERS, PARTICULARLY FOR VEHICLES

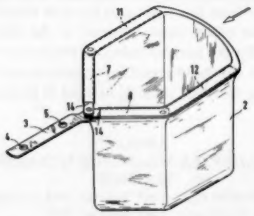
Klaus Rafeldt, Grunlandweg 270, D 7181 Jagstheim, Germany

Filed Apr. 21, 1972, Ser. No. 246,280

Claims priority, application Germany, Apr. 23, 1971, 2120058

Int. Cl. B65b *67/12*

U.S. Cl. 248—99 **3 Claims**



1. In a collapsible frame structure for supporting a refuse bag of the type having a pocket around its upper edge and an opening in said pocket, the frame structure including two fork arms coupled at one end by a pivot joint and insertable at their other ends into the pocket on opposite sides of the bag through the opening, the fork arms being laterally displaceable from each other to thereby open the mouth of the bag, the improvements characterized by:

a. an elongated stem member adapted to be secured at one end to a mounting structure, such as the dashboard of a motor vehicle, and having a hole at the other end for receiving a hinge pin;

b. each fork arm having first and second arm members pivotally joined together at a first end, each of the second arm members have offset crank portions at their pivotal joint ends one of said second arm members being offset downwardly, the other of said second arms being offset upwardly such that the second arms are vertically disposed with respect to each other to thereby dimensionally minimize the space occupied by the frame structure when collapsed;

c. holes in each second end of the first arm members, and

d. a hinge pin pivotally extending through the hole in the

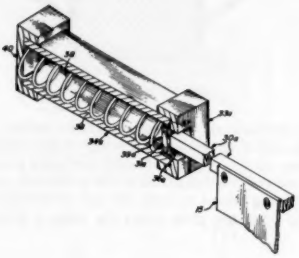
stem member and the holes in the first arm members to join said first arm members to said stem such that the first arms are vertically disposed with respect to each other and thereby from a common joint to render the fork arms laterally displaceable from each other over a wide-angle relative to the stem member.

3,848,842

IMPINGEMENT SHIELD

Milford L. Jepsen, 18018 Jersey Ave., Artesia, Calif. 90701

Filed Mar. 14, 1973, Ser. No. 341,075
Int. Cl. F16m *13/00*
U.S. Cl. 248—204 **4 Claims**



1. Apparatus for mounting an impingement shield, comprising:

a housing;

a support rod adapted to have an impingement shield supported therefrom;

said support rod having a pressure plate affixed to said support rod to define a rod/plate assembly;

said pressure plate being positioned within said housing;

means for resiliently orienting said support rod in a normally horizontal orientation whereby said support rod and said supported shield may move under the influence of a disturbing face and for resiliently reorienting said support rod and said supported shield when said disturbing force is removed;

said housing having an aperture therein;

said support rod being positioned to project out of said housing through said aperature;

said resilient orienting means comprising at least one compression spring positioned in said housing, with one end of said spring positioned to press against a surface of said plate, and the other end of said spring positioned to press against a wall of said housing;

said housing having at least one collar like end piece having said aperture;

said plate being positioned in said housing with the outer surface of said plate abutting the inner surface of said collar like end piece, with said support rod projecting out of said housing through said aperture;

said compression spring urging said outer surface of said plate against said inner surface of said end piece for causing said support rod to project outwardly through said aperture of said collar like end piece in a normally horizontal orientation.

3,848,843

FIXTURE ASSEMBLY

Leon M. Levy, Chicago, Ill., assignor to Selfix, Inc., Chicago, Ill.

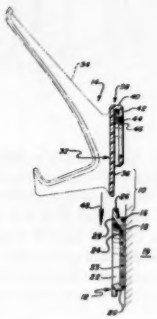
Filed Aug. 3, 1972, Ser. No. 277,664
Int. Cl. A47g *1/16*
U.S. Cl. 248—224 **9 Claims**

1. A fixture and support assembly for effectively attaching a fixture to a supporting surface, said assembly comprising:

a fixture having a first connecting member for connecting said fixture to a fixture support;

a fixture support adapted to be affixed to the supporting surface and having a second connecting member for connecting said support to said fixture, said second connecting member having a configuration operative to connect said support to said fixture independently of the angular orientation at which said fixture support is affixed to the supporting surface;

said first and second connecting members being complementary in shape and engageable with each other to effect interconnection between said fixture and said support with said fixture at a selected one of a plurality of orientations relative to said support;



said complementary connecting members including interlocking elements engageable with each other, said interlocking elements having a configuration for locking said interconnected fixture and fixture support at said selected orientation to preclude relative angular movement therebetween;

one of said complementary connecting members including retaining means engageable with at least a portion of the other of said connecting members for precluding disengagement of said interlocking elements when said fixture and support are interconnected;

whereby said fixture is retained in said selected orientation relative to said support and relative angular movement between said interconnected fixture and support is precluded.

3,848,844

ADJUSTABLE DISPLAY SHELF APPARATUS

Robert R. Barrett, Houston, Tex., assignor to Visual Designs Mfg. Co., Houston, Tex.

Filed Apr. 6, 1973, Ser. No. 348,481
Int. Cl. A47b *47/00;* **A47g** *29/02*
U.S. Cl. 248—245 **8 Claims**

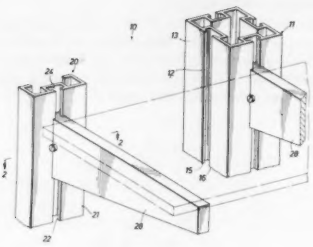
1. A display unit comprising:

vertical support means having opposed spaced shoulder means defining an elongated groove therebetween and having elongated chamber means formed therein and being disposed behind said opposed shoulder means, said vertical support means defining first generally planar friction surface means;

support bracket means having a support portion for supporting objects thereon, said support bracket means having a face portion of a configuration generally corresponding to the cross-sectional configuration of said elongated groove and said elongated chamber, said face portion of said bracket means being disposed within said elongated chamber means and extending through said elongated groove and being movable along said groove

and chamber, said face portion defining second generally planar friction surface means, said support bracket means having a transverse latch aperture formed therein, at least a portion of said aperture intersecting the plane of said first friction surface means; and

latch pin means being disposed within said transverse aperture of said bracket means and having cam surface means



defined thereon, said latch pin means being movable relative to said bracket means between a locked position where said cam surface means engages said vertical support means and urges said first and second friction surface means into friction locked engagement and a released position where said cam surface means is retracted to a position releasing said frictional engagement between said first and second friction surfaces.

3,848,845

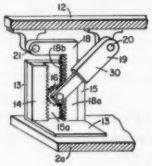
ADJUSTABLE SEAT ASSEMBLY

George A. Bogart, Cleveland, Ohio, assignor to Arthur J. Klein, Cleveland, Ohio, a part interest

Filed Apr. 7, 1972, Ser. No. 241,991

Int. Cl. F16m *11/24, 13/00;* **B60n** *1/02*

U.S. Cl. 248—393 **3 Claims**



1. An adjustable seat assembly comprising a base, a seat member disposed above said base, drive means for swinging and elevating said seat relative to said base, bar means connectable with said base being movable in direction generally perpendicular to said base, means pivotally connecting said bar means to said seat, lever means comprising a first lever and a second lever operatively connected to each other in telescopic relation, the first lever being operatively connected to the bar means and the second lever being operatively connected to said seat, said drive means being operatively connected to said seat and actuable to swing said seat about said bar means pivotal connection, and said lever means being movable with said seat and operable to move said bar means relative to said base effective with said drive means to simultaneously swing and elevate said seat.

3,848,846

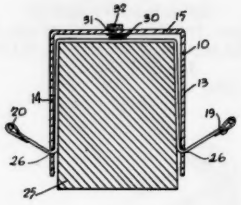
SNOW MOLD

Edwin D. Ebner, New City, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Oct. 5, 1973, Ser. No. 403,959

Int. Cl. B28b *7/34*

U.S. Cl. 249—66 **3 Claims**



1. In combination, a hollow mold body having a mold body top plate and at least one mold removal strap adapted to rest on the top plate of said mold body, said strap passing through slots in each of two side plates of the mold body, together with tension spring means to hold the mid-section of the strap to the mold body top plate when the strap is free of external force.

3,848,847

CASTING METHOD FOR ALUMINUM OR ALUMINUM ALLOYS AND A MOLD THEREFOR

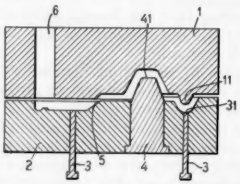
Noboru Komatsu; Tohru Arai, and Masayoshi Mizutani, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho

Filed July 2, 1973, Ser. No. 375,390

Claims priority, application Japan, July 11, 1972, 47-69767

Int. Cl. B22c *3/00*

U.S. Cl. 249—115 **9 Claims**



1. In a mold for casting aluminum or aluminum alloys comprising at least two mold members having mold surfaces coacting to form a cavity for receiving the molten aluminum or aluminum alloy, each of said mold members being of a ferrous metal, the improvement comprising at least a portion of the mold surface of at least one mold member being a metal carbide layer of at least one metal being selected from Group V, Subgroup a of the periodic table.

3,848,848

FAIL SAFE APPARATUS FOR FLUID ACTUATED SYSTEMS

Domenic A. Di Tirro, 3139 Harriet Rd., Silver Lake, Ohio 44224

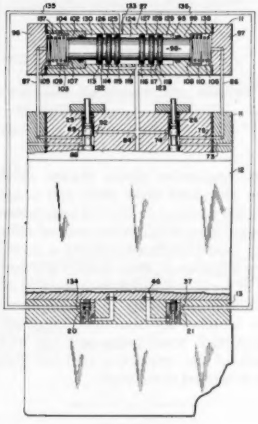
Filed Mar. 25, 1974, Ser. No. 454,369

Int. Cl. F16k *11/24*

U.S. Cl. 251—31 **11 Claims**

1. A fluid pressure cutoff apparatus comprising a housing, a bore extending from one end of said housing to the other

end, a spool slidably mounted in said bore for movement axially of said bore between a central position and side positions, said bore having annular shoulders spaced from the ends of said bore forming end chambers and supporting said spool, centering means for resiliently holding said spool in a centered position, fluid supply passages connected to said end chambers for communicating with separate valve means, said spool having ends extending into said end chambers and having the same effective end areas subjected to fluid pressure whereby said spool is biased from a central position to one of said side positions when the fluid pressure in one of said end chambers exceeds the fluid pressure in the other of said end chambers by a force exceeding the resilient force of said centering means, said spool having annular lands in sealing engagement with said bore at positions between said annular shoulders



dividing the space between said spool and said bore into a central chamber and side chambers, a central inlet passage in communication with said bore for admitting fluid into said central chamber and a central outlet passage for communicating fluid out of said central chamber with said spool in said central position and for cutting off communication of said fluid out of said central chamber when said spool is displaced into one of said side positions, side inlet passages located in communication with said bore between said annular shoulders and said central inlet passage for communicating fluid under pressure into one of said side chambers when said spool is in a side position whereby fluid pressure acts against the effective area of one of said annular lands of said spool to supplement the force on said spool ends biasing said spool and locking said spool in the side position.

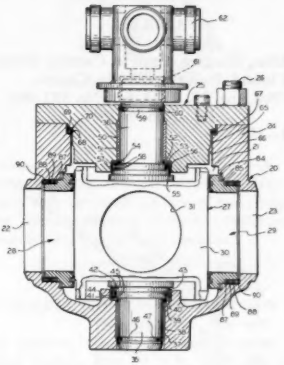
3,848,849

FLUID CONTROL VALVE

William H. Alexander, Houston, Tex., assignor to Vapor Corporation, Chicago, Ill.

Filed June 29, 1973, Ser. No. 375,082
Int. Cl. F16k *5/20*
U.S. Cl. 251—314 **26 Claims**

1. In a valve including a valve body defining a valve cavity, axially aligned inlet and outlet ports in the body communicating with said cavity, a plug rotatably mounted in the cavity on an axis perpendicular to the axis of said ports, said plug having a passageway extending transaxially therethrough which when aligned with the ports provides communication therebetween, and seats within the cavity at the ports coacting with the plug and body to define a seal between the plug and ports when the plug is in closed position, the improvement in the seats wherein each seat comprises a generally cylindrical rigid base having a passageway therethrough mating with a port, the axis of the seat extending perpendicular to the pivot axis of the plug and common with the port axis, the end of the seat coacting with the plug being arcuately formed on the same radius as the plug and having bonded thereon a resilient seal member, said seal member including inner and outer continuous spaced seal lips having ribbon-like sealing surfaces engaging



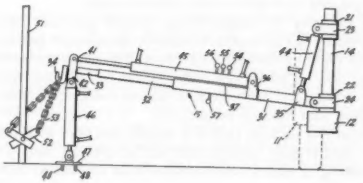
the plug, and wear resistant load bearing insert means mounted at the end of the seat engaging the plug, said bearing insert means including a pair of inserts positioned between the inner and outer seal lips at diametrically opposed positions along the seat and aligned along the pivot axis of the plug above and below the plug passageway, each insert having a bearing surface slightly recessed from the sealing surfaces of said seal lips.

3,848,850

VEHICLE MOUNTED HYDRAULIC POWERED POST PULLER

John H. Bemis, Kalamazoo, Mich., assignor to Bemis & Sons, Inc., Kalamazoo, Mich.

Continuation-in-part of Ser. No. 320,163, Feb. 2, 1973, abandoned. This application Mar. 1, 1974, Ser. No. 447,143
Int. Cl. E21b *19/00;* **B66f** *3/00*
U.S. Cl. 254—30 **17 Claims**



1. A hydraulically operated post-pulling apparatus adapted to be mounted on a vehicle comprising

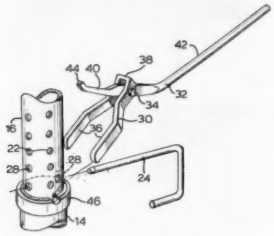
a. a support adapted to be mounted on said vehicle,

b. a boom pivotally mounted at one end with respect to said support and adapted to revolve about a vertical axis and additionally to be raised and lowered, said boom comprising a pair of telescopingly arranged boom members,

c. first hydraulic cylinder means mounted with respect to said support and said boom and adapted for raising and lowering said boom angularly,

d. second hydraulic cylinder means affixed to said boom members and adapted to extend and retract said boom members with respect to each other,
e. third hydraulic cylinder means pivotally connected at one end to the remote end of said boom and having a ground-engaging support means mounted at the other end, and
f. means on the remote end of said boom for engaging means adapted to engage and grip a post to be pulled from the ground.

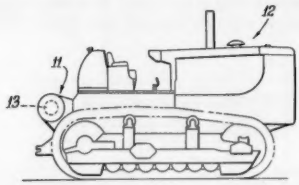
3,848,851
JACKING DEVICE
Murray A. Elias, Islington, Ontario, Canada, assignor to Dell Holdings Limited, Rexdale, Ontario, Canada
Filed Aug. 28, 1973, Ser. No. 392,208
Int. Cl. B66f *1/04*
U.S. Cl. 254—108 **11 Claims**



1. A jacking device comprising
a. a first tubular member,
b. a second tubular member telescopically mounted within said first tubular member and projecting outwardly from one end of said first tubular member,
c. adjustment means for adjusting the position of said second tubular member with respect to said first tubular member,
d. said adjustment means consisting of a bracket member and a lever member, said bracket member having an inner end and an outer end, fulcrum means pivotally mounting said lever member with respect to said bracket member with a first end of said lever member projecting outwardly from one side of said fulcrum means and a second end of said lever member projecting outwardly from the other side of said fulcrum means, said outer end of said bracket being adapted to engage said one end of said first tubular member to support said bracket means in a position with said fulcrum means spaced outwardly from said first and second tubular means,
e. a plurality of longitudinally spaced passages opening inwardly of said second tubular member for engaging said first end of said lever whereby said second tubular member may be telescoped with respect to said first member in response to movement of said second end of said lever about said fulcrum means, and
f. means for locking said first tubular member with respect to said second tubular member to prevent inward telescoping of said second member with respect to said first member.

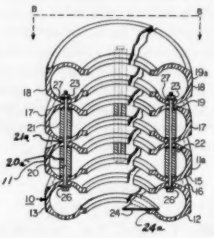
3,848,852
WINCH DRUM DISCONNECT CLUTCH
Henry T. Therkildsen, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed May 29, 1973, Ser. No. 364,902
Int. Cl. B66d *1/24*
U.S. Cl. 254—187 R **2 Claims**

1. A winch of the type having a rotatable cable drum and comprising
a power input means,
a rotatable, elongated drive shaft,
clutch means providing a selective coupling between the power input means and the elongated drive shaft,
a first clutch member rotatably mounted upon the drive shaft and operatively coupled in driving relation with the rotatable cable drum,
a second clutch member secured for rotation with the shaft and axially movable thereon,
the first and second clutch members having facing jaw-type gear faces suitable for meshing engagement with each other, and



hydraulically responsive piston means axially arranged within the elongated drive shaft and coupled with the second clutch member to control engagement and disengagement between the first and second clutch members, the power input means comprising a power input shaft supporting a first bevel gear, second and third bevel gears arranged in meshing relation with the first bevel gear and in opposition to each other, the clutch means comprising respective clutches for selectively coupling each of the second and third bevel gears with the elongated drive shaft, each of the respective clutches being mounted upon the elongated drive shaft.

3,848,853
HIGHWAY SAFETY TIRE DEVICE
Merton B. Way, 5300 John R. Rd., Troy, Mich. 48084, and John Pas, 2915 Hessel, Rochester, Mich. 48063
Filed Mar. 15, 1973, Ser. No. 341,788
Int. Cl. E01f *13/00*
U.S. Cl. 256—1 **2 Claims**



1. In a highway safety device for use as a barrier on a roadway, the combination of, at least three full-scale used motor vehicle tires concentrically arranged and adapted and stacked to form an elongated, cylindrical, integral columnar body having an elongated, concentric, cylindrically outlined opening formed by the inside rims of said stacked tires, concentric outside completely cylindrical walls defined by the treads of said tires, and transverse completely circular sidewalls connected between said rims and said tread, said sidewalls having circular convex

portions thereof each contacting the circular convex portion of the tire adjacent to it,

walls defining bores formed annulary and axialy in the side walls of said tires generally at the point of tangency thereof, said bores aligned with each other so that when said tires are stacked said bores define at least two axial oppositely spaced openings through said side walls,

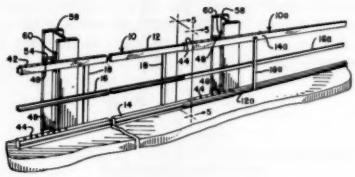
and fastening means operable to fixedly fasten said tires integrally together in shock resistant relationship to each other through said connected sidewall circular portions only of said sidewalls for leaving said concentric opening entirely free of obstruction, said fastening means including a plurality of rigid elongated fastening members egaging said bores and elongated, one-piece spacers engaging the sidewalls of said tires adjacent said elongated members in opposed tensioned relationship to said elongated members to maintain said stacked tires in rigid spaced shock resistant relationship to each other.

3,848,854

SAFETY BARRIER

Joseph L. De Barbieri, Bethlehem, Pa., assignor to Beth-Con Realty, Inc., Bath, Pa.

Filed July 30, 1973, Ser. No. 383,746
Int. Cl. E04h *17/16*
U.S. Cl. 256—65 **12 Claims**



1. A fence section adapted for partial telescopic assembly with a corresponding section when said corresponding section is in an inverted position relatively to said fence section to provide a longitudinally extending barrier, said fence section comprising first and second rails in spaced relationship and means connecting said rails and maintaining them in said spaced relationship, said means connecting said rails terminating at said rails, said first rail having a body element including end portions of given cross sectional dimensions and shape and said second rail including longitudinally extending hollow interior end portions dimensioned and positioned to telescopically receive an end portion of a body element of a rail corresponding to said first rail when said corresponding rail is in an inverted position with respect to said first rail, said end portions of said first and second rails each including means for cooperation with means for securing said fence sections to a corresponding section in an endwise adjusted relationship when said fence section is in partial telescopic assembly with said corresponding inverted section.

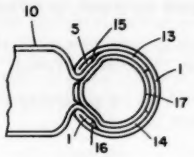
3,848,855

TUBING CONNECTION

Edward E. Weiland, 8768 Buffalo, Union Lake, Mich. 48085

Continuation-in-part of Ser. No. 248,253, April 27, 1972, Pat. No. 3,776,523, which is a continuation-in-part of Ser. No. 120,107, March 2, 1971, abandoned. This application June 18, 1973, Ser. No. 371,308
Int. Cl. E04h *17/14*
U.S. Cl. 256—73 **6 Claims**

1. A tubing assembly comprising a connection of a first tube member to a second tube member, said second tube member having an elongated longitudinal slot in its side wall, a pair of flanges along the longitudinal edges of said slot, said flanges being deformed away from each other inside said second tube member and conforming to the inside surface of said second tube member, said first tube member having opposed recesses in an end forming two tabs extending from said end, said tabs



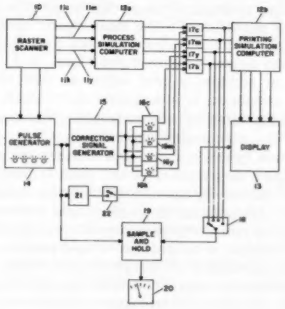
being flattened and extending through said slot and being spread outwardly within said second tube member to substantially conform with the inside surface of said flanges and said second tube member thereby securely connecting said first tube member to said second tube member.

3,848,856

LOCAL CORRECTION APPARATUS FOR A COLOR PREVIEWER

Nicholas J. Reeber, Hauppauge, and Karl M. St. John, Huntington Station, both of N.Y., assignors to Hazeltine Corporation, Greenlawn, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,234
Int. Cl. H04n *9/02*
U.S. Cl. 358—76 **14 Claims**



1. In a graphic arts color previewer wherein a set of color component signals are developed by successively scanning elemental areas of an input image, said signals being individually representative of corresponding elemental areas of color separations in the actual graphic arts process being previewed, and wherein said color component signals are processed to provide on a display a preview image simulating a color reproduction of said input image, apparatus for adjusting the color content of a selected local area of said preview image, comprising:

means for generating a series of pulse-type signals in synchronism with the scanning of said input image, the number of pulses, pulse duration and time of occurrence of said pulse-type signals in said series being selected to define a series of time intervals corresponding to a local area of said preview image;

and means responsive to said pulse-type signals for adjusting the color content of at least one of said color component signals during said time intervals defined by said pulse-type signals to form a locally corrected color component signal;

thereby causing an adjustment in the color content of said selected local area in said preview image.

3,848,857

CARBURETTORS PROVIDED WITH A STARTING DEVICE WITH AN ECCENTRIC FLAP VALVE

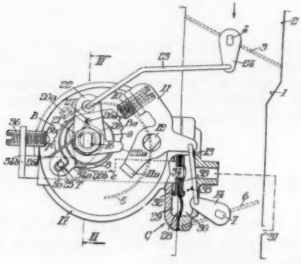
Andre Louis Mennesson, Neuilly S/Seine, France, assignor to Societe Industrielle De Brevets Et D'Etudes S.I.B.E., Nanterre, France

Filed June 26, 1973, Ser. No. 373,748

Claims priority, application France, July 31, 1972, 72.27507

Int. Cl. F02m *1/10*

U.S. Cl. 261—39 B **9 Claims**



1. Carburettor comprising a starting device with an eccentric flap valve situated in an air intake of the carburettor upstream of an intake system for the primary air/fuel mixture, said valve being actuated by the air flow inspired by the carburettor against the effect of a first thermostatic member which tends to close said flap valve when the temperature of an element of the engine is below a given limit, said carburettor comprising in addition a cam called a "fast idling" cam adapted to cooperate with a second thermostatic member, said cam being intended to partly open the usual throttle member of the carburettor when the flap valve is at least partially closed, pneumatic means sensitive to the pressure in the intake pipe downstream of the throttle member being provided to control, by their movement, the opening of the valve when said pressure diminishes, said carburettor also comprising stop means with several positions, adapted to limit, in variable manner as a function of said position that they occupy, the movement of the pneumatic means, and said second thermostatic member constituting means sensitive to the ambient temperature arranged to control the position occupied by the stop means.

3,848,858

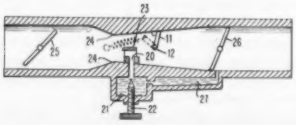
VELOCITY-ACTUATED FUEL CONTROL VALVE

Kenneth J. Page, P.O. Box 152, Walton, N.Y. 13858, and John Van Buren, Woodlawn Rd., No. 3, Walton, N.Y. 13856

Filed Apr. 27, 1973, Ser. No. 355,077

Int. Cl. F02m *7/06*

U.S. Cl. 261—63 **2 Claims**



1. In combination with the intake manifold of an internal combustion engine, said manifold having a fuel supply inlet and a Venturi portion, an independent valve assembly comprising a semi-circular disc located in a sleeve and pivotally supported over a shaft transversely positioned in said sleeve, a coil spring wound around said shaft engaging at one end said disc and at the other end said sleeve, said assembly being adapted to be inserted in the intake manifold of an internal combustion engine.

ERRATUM

For Class 264—64 see:
Patent No. 3,848,862

3,848,859

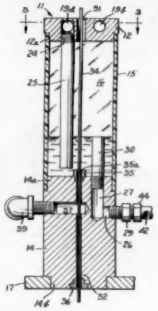
CONTINUOUS QUENCHING MEANS FOR A MOVING WIRE

Robert T. Catlin, Trumbull, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Apr. 30, 1973, Ser. No. 355,773

Int. Cl. C21d *9/52*

U.S. Cl. 266—3 R **4 Claims**



1. A quenching apparatus for quenching a continuously moving member in a liquid, said apparatus comprising a housing having a chamber for containing a quenching fluid and having an upper base containing an upper access opening, a lower access opening aligned with the upper access opening to define a path for the member passing through the chamber, pneumatic sealing means for preventing the passage of quenching fluid and permitting the passage of the member through the lower access opening, and a cooling passage in the upper base having end portions and connected at one end portion to a fluid inlet pipe extending into said chamber and at another end portion to a source of said quenching fluid, the cooling passage being disposed to direct said quenching fluid a substantial circumferential distance around said upper access opening before said quenching fluid enters the fluid inlet pipe.

3,848,860

WASTE GAS COLLECTING DEVICE OF CONVERTER

Hidenori Maeda, Tokyo; Yujiro Matsui, Yokohama; Tsukasa Ikeda, Kosakamachi, and Eikichi Mohri, Tokyo, all of Japan, assignors to Taisei Kensetsu Kabushiki Kaisha, Dowa Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1973, Ser. No. 333,506

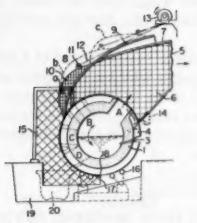
Foreign Application Priority Data Mar. 29, 1972, Japan 47/30752

Int. Cl. C21c *5/38*

U.S. Cl. 266—18 **1 Claim**

1. A waste gas collecting device of a converter, comprising an apron arranged to cover the entire shell of the converter except for the mouth of said converter, opposed upright windshield plates provided on the front side of the converter to shield both sides of the converter and apron, a windshield plate suspended below the converter, a waste gas hood arranged above the rear portion of the converter and extending

forwardly to a point to cover the mouth of the converter during the reaction stage, said waste gas hood being provided with an opening at the forward end portion thereof, and a movable hood slidingly moved on said waste gas hood to open and close said opening and adapted to cover the mouth of the converter over the section of the arcuate locus of movement of the converter mouth from the position in the reaction stage to the position in the material charging stage, said device



being used in a waste gas treatment system having a waste gas exhaust route including the waste gas hood, a dust chamber, a waste heat boiler and a Cottrell precipitator, and a sulfuric acid plant in which a waste gas emerging from the converter during the reaction stage and supplied thereto through said waste gas exhaust route by an exhaust fan is desulfurized through a process of recovering SO_3 from said waste gas in the form of sulfuric acid.

3,848,861

DUST SHIELD FOR USE WITH A MOTION TRANSMITTING ROD

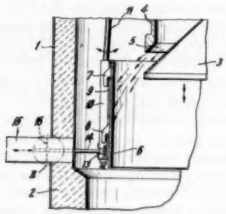
Stephanus Nicolaas Hendrick Rumping, Beverwijk, Netherlands, assignor to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Oberhausen, Netherlands

Filed Sept. 22, 1972, Ser. No. 291,409

Claims priority, application Germany, Sept. 21, 1971, 2147123

Int. Cl. C21b 7/02

U.S. Cl. 266—25 **11 Claims**



1. A device for adjusting the position of a structural element in a dust-laden environment, such as for use inside of a metallurgical blast furnace, including a drive member, a passageway extending from said drive member toward said structural element, an axially elongated motion rod extending through said passageway between said drive member and said structural element, said motion rod being capable of effecting the combination of longitudinal movement and limited pivotal movement and/or transverse movement in at least one direction, means for preventing the passage of dust along said motion rod toward said drive member, wherein the improvement comprises that said means for preventing the passage of dust includes a shield having an opening therethrough, said shield extending transversely of said motion rod and across said passageway so that flow through said passageway is limited to the opening through said shield, a plate-shaped slide movably displacebly mounted in said shield and extending transversely of said motion rod, said slide closing the opening through said shield, said slide having a bore therethrough so that said motion rod extends through the bore, the bore in said motion rod shaped to conform to the transverse configuration of said motion rod with the minimum clearance therebetween, and said slide closing the opening through said shield in every position of said motion rod so that there is no opening through said passageway through which dust can pass.

3,848,862

VEHICLE HYDROPNEUMATIC SUSPENSION SYSTEM

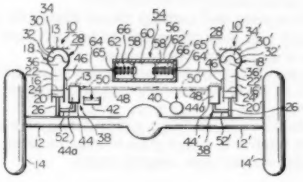
Naganori Ito, and Hiroshi Aikawa, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Mar. 26, 1973, Ser. No. 344,485

Claims priority, application Japan, Mar. 27, 1972, 47-29701

Int. Cl. F16z 5/00

U.S. Cl. 267—64 R **20 Claims**

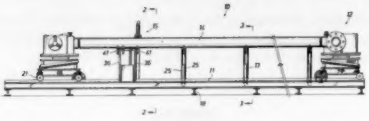


1. A hydropneumatic suspension system for a motor vehicle having a body and wheel supporting means, comprising first and second suspension struts each of which is mounted between said vehicle body and said wheel supporting means and has a chamber filled with pressurized hydraulic fluid, each of said suspension struts being retractable and extensible in response to relative movement between said vehicle body and said wheel supporting means to increase and reduce, respectively, the pressure of the hydraulic fluid in the corresponding chamber, a hydraulic fluid pressure source and a hydraulic fluid reservoir fluidly communicable with said chambers of said suspension struts to supply and discharge hydraulic fluid into and from, respectively, said chambers thereby maintaining the height of said vehicle body substantially constant independently of the load of said vehicle, levelling means disposed between said chambers and said source and between said chambers and said reservoir to control fluid communication therebetween and responsive to increases and reductions of the load of said vehicle to establish said fluid communication between said chambers and said source and between said chambers and said reservoir, an accumulator including a casing having therein first and second hydraulic fluid chambers, a gas chamber defined therebetween and filled with pressurized gas, and first and second partition members separating said first and second hydraulic fluid chambers, respectively, from said gas chamber, said first and second hydraulic fluid chambers of said accumulator communicating respectively with said chambers of said first and second suspension struts, each of said partition members being responsive to the difference between the fluid pressures in said hydraulic fluid chambers of said accumulator to move toward one of said hydraulic fluid chambers of said accumulator in which one the fluid pressure is lower.

3,848,863
WELDING JIG

Harold W. Owen, Los Alamitos, Calif., assignor to Pullman Incorporated, Chicago, Ill.

Filed May 3, 1973, Ser. No. 356,860
Int. Cl. B23k 37/04
U.S. Cl. 269—9 13 Claims

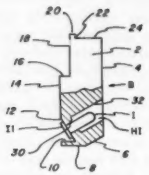


1. A welding jig comprising
a set of elongate rails defining a first axis of specified length;
means transversely attached to said rails;
at least a pair of aligned selectively erectable pipe support means pivotally supported on said attached means and which are erectable to a pipe supporting position above and parallel to the first axis and which are further movable to a retracted position clearing said rails for movement therealong;
carriage means supported on said rails;
means for moving said carriage means along said rails and past said pipe support means when said pipe support means is in the retracted position;
rotatable means carried by said carriage means and having an axis of rotation generally perpendicular to the first axis; and
said rotatable means holding a pipe fitting at a specified position relative to a pipe prior to attachment to the pipe supported on said pipe support means.

3,848,864
FINGERS EMPLOYING INSERTS TO SUPPORT WORK PIECES IN A FLOW SOLDER MACHINE

Gregory J. Dwyer, Livonia, and Walla L. Ferris, Detroit, both of Mich., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 21, 1972, Ser. No. 308,534
Int. Cl. B23q 1/00
U.S. Cl. 269—46 8 Claims

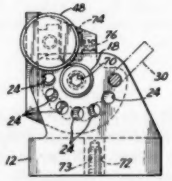


1. A finger for use in supporting a workpiece in a flow solder machine comprising
a block,
means associated with said block enabling the block to be fastened to a movable conveyor,
means associated with said block enabling it, in cooperation with a plurality of similar blocks which are fastened to a movable conveyor, to support a workpiece and thus enable the workpiece to be carried through the work stations of a flow solder machine,
said block, and each similar block, including means making it independently removable from said movable conveyor for cleaning and repair and independently replaceable thereon,
said means to support a workpiece including an opening in said block, and in each similar block, and a resilient insert in said opening,
the block terminating at one end in a ledge having a substantially flat face which may be drilled to enable the block to be locked to the movable conveyor of a flow solder machine,
the block terminating at the other end in a ledge shaped to provide a seat against which a workpiece may rest, and
the opening in said block being formed through the block adjacent the other end to receive the resilient insert, said seat and said resilient insert together forming a support for a workpiece.

3,848,865
CUTTING TOOL HOLDING DEVICE

Marlin E. Bird, 3417 Gabriel Ave., Zion, Ill. 60099

Filed Jan. 18, 1974, Ser. No. 434,662
Int. Cl. B23q 104
U.S. Cl. 269—69 7 Claims



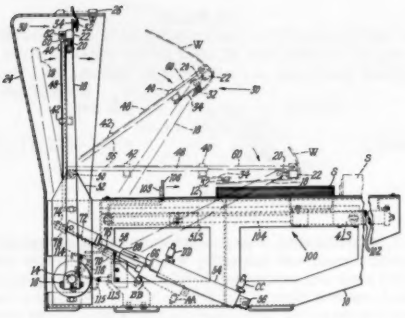
1. A device for holding cutting tools such as form tools and the like, while sharpening the same, the device comprising:
a base frame having a generally flat base portion and a generally transverse portion extending outwardly from said base portion;
a holding member having a generally flat front face and an acutely angled abutment wall extending along one side of said front face, said wall being adapted to receive one side of a dovetail portion of the cutting tool, said holding member having a transverse extension for contacting the transverse portion of said base frame;
means for pivotably connecting said transverse extension to said transverse portion to enable said front face to be angularly adjusted relative to said base frame;
means for releasably locking said front face of said holding member in one of several predetermined angular positions, said locking means comprising a cooperative set of apertures in each of said base frame transverse portion and said holding member transverse extension and pin means adapted to be inserted therein, each of said sets being on a different radius from the pivotable connection so as to prohibit said pin means from being inserted into more than one aperture of said holding member transverse extension, once said pin means has been inserted into an aperture in said base frame transverse portion; and,
means associated with said holding member for engaging the opposite side of said dovetail portion of the cutting tool and urging said dovetail portion toward said abutment wall to securely hold the tool in the device.

3,848,866

MACHINES FOR STACKING LIMP WORK PIECES

George A. Fuller, Jr., Wenham; Wilfred L. Langevin, Beverly; Carlton G. Lutts, Salem, and Geoffrey C. Neiley, Jr., North Reading, all of Mass., assignors to USM Corporation, Boston, Mass.

Filed Mar. 22, 1972, Ser. No. 236,878
Int. Cl. B65h 29/08
U.S. Cl. 271—63 R 9 Claims



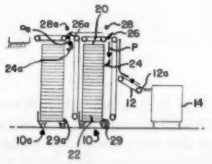
1. A machine for stacking flexible work pieces, comprising a relatively movable wiper blade and hold-back means, the wiper blade being carried by an oscillatory lever and the hold-back means being carried by an oscillatory member operable substantially in phase with said lever, the turning radius of the blade being greater than that of the hold-back means, means for jointly moving the blade and hold-back means, respectively, between a work receiving position and a delivery position wherein each piece is to be stacked, and mechanism for causing the hold-back means initially to engage each work piece at said work receiving position and then relatively advance the wiper blade lengthwise of the work piece and away from the hold-back means during their movement toward said delivery position to cause the transferred work piece to be outspread lengthwise for deposit on the stack.

3,848,867

NO-COUNTER SORTER-STACKER

Dale R. Johnson, Seattle, Wash., assignor to Norfin, Inc., Seattle, Wash.

Filed Sept. 20, 1972, Ser. No. 290,625
Int. Cl. B65h 29/60
U.S. Cl. 271—173 4 Claims



1. In a sorting-stacking apparatus having a plurality of successive stations for receiving sheets of paper or the like and sheet distributing means including a sheet deflector movable along said stations for inserting the sheets into said stations and adapted to receive the sheets from a supply capable of feeding a flow of sheets along a path to the distributing means with a time spacing between each successive sheet being at a predetermined generally uniform first time interval, the improvement comprising:

control means for said sheet deflector for directing the insertion of the sheets into predetermined stations, said control means including means operative during said flow of sheets for detecting a second time interval after passage of a sheet greater than said first time interval and in response to said detection directing the insertion of the next sheet into a different station;

said control means including means for directing the insertion of all of a run of sheets into one station for stacking a plurality of sheets into said station before inserting a sheet into a subsequent station; and stack control means responsive to said means for detecting said second time interval for directing the insertion of the sheets after said second time interval into the next successive station;

said control means including means for directing the insertion of individual sheets into successive stations starting with an initial station and sort control means responsive to said means for detecting said second time interval for directing the insertion of the next sheet after said second time interval into said initial station;

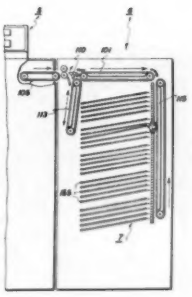
and manually operable switch means for selectively actuating said stack or sort control means.

3,848,868

SHEET SORTING APPARATUS

Denis J. Stemmle, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 9, 1973, Ser. No. 339,805
Int. Cl. B65h 29/60
U.S. Cl. 271—173 5 Claims



1. Sorting apparatus comprising:

a frame;

an array of tray members arranged in a column each pivotally supported by said frame at one end thereof on a pivot axis;

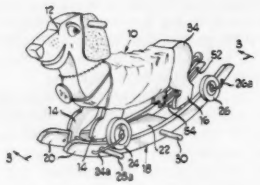
conveyor means for conveying sheets past an inlet of the array of tray members; and

actuating means operatively associated with said conveyor means and moving in the same direction therewith, said actuating means including camming means rotatable on an axis extending in the direction which said actuating means is moved for pivoting each of said tray members into an opened position and deflecting a sheet into the opened tray member at predetermined positions along the array of tray members.

3,848,869
EXTENSIBLE RIDING TOY

Howard J. Morrison, Deerfield, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 17, 1973, Ser. No. 324,343
Int. Cl. A63g 17/00
U.S. Cl. 272—52.5 19 Claims

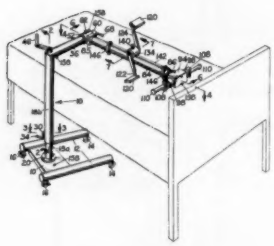


1. A riding toy, comprising: a body portion simulating an animal having leg means movably connected to a ground engaging base structure, the body portion of the simulated animal being elongated to provide means on which a child may sit and the base structure having means providing for movement of the toy relative to the ground, said body portion including a plurality of relatively longitudinally movable parts with at least one of the parts being movable relative to said base structure, and with leg means on said one part being connected to the base structure for movement relative thereto to accommodate the relative movement of said body parts, and means for adjusting the length of said body portion for accommodating one or more riders on the toy.

3,848,870
EXERCISE APPARATUS ON PEDESTAL FOR PATIENTS

Lloyd L. Craig, 1024 Murry Dr., The Dalles, Oreg. 97054

Filed Feb. 12, 1973, Ser. No. 331,355
Int. Cl. A63b 17/00, 23/00, 23/04
U.S. Cl. 272—67 10 Claims

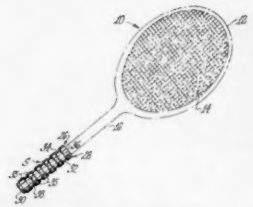


1. Exercise apparatus for patients comprising a base, a pedestal on said base, a substantially horizontal lateral extension on the upper end of said pedestal having a free end, an arm secured to said lateral extension adjacent to the free end of the latter whereby to be offset laterally from said pedestal, said arm extending at right angles to said lateral extension, and exercising means on said arm for engagement by a patient in a lying or sitting position, said exercising means comprising a head on said arm, laterally projecting handles pivotally connected to said head and having cam ends engaged eccentrically against said head, and spring means in said head urging said cam ends against said head whereby an exercising force is required to pivot the handles relative to the head in the eccentric rotation of said cam ends.

3,848,871
NON-SLIPPING HAND GRIP FOR TENNIS RACKET AND THE LIKE

Alvin H. Sweet, 5168 Wood Ave., Apt. B, South, South Gate, Calif. 90280, and Don A. Sweet, 8610 Graham Ave., Los Angeles, Calif. 90002

Filed Apr. 19, 1973, Ser. No. 352,647
Int. Cl. A63b 49/00; B62k 21/26
U.S. Cl. 273—75 4 Claims

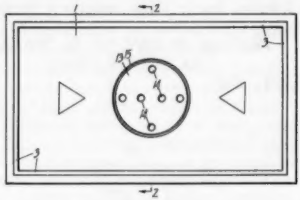


1. In combination, a sports implement having a longitudinal handle formed with respective wide sides and narrow sides, and a hand grip attachment therefor comprising wrap-around sheet material disposed lengthwise snugly overlying a hand grip portion of the handle and carrying a longitudinal row of manually-compressible suction cups extending only along opposite narrow sides thereof, said sheet material being formed with spaced-apart openings overlying at least one of said wide sides between the rows of suction cups and being of sufficient size to enable a user's grasped hand to directly contact the underlying handle therethrough and thus in conjunction with the opposite rows of manually compressed suction cups to maintain a non-slipping grip on the handle.

3,848,872
BILLIARD TYPE TABLE WITH ROTATABLE DISK ON PLAYING SURFACE HAVING AT LEAST ONE BALL APERTURE THERETHROUGH

George Velissaris, 235 Chruch St., Richmond Victoria, Australia

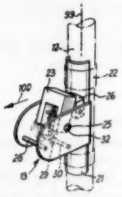
Filed June 7, 1973, Ser. No. 367,791
Claims priority, application Australia, June 7, 1972, 9238/72
Int. Cl. A63d 15/00
U.S. Cl. 273—125 R 10 Claims



1. A billiard type table comprising, in combination, means forming a substantially planar playing surface; cushion means extending along the periphery of said playing surface; said playing surface having a circular aperture therein spaced from said cushion means; a circular disk rotatably mounted in said aperture, said disk normally being stationary during play on said playing surface, said disk further being mounted for stepwise rotation about a vertical axis, with its upper surface coplanar with said playing surface to form a movable part of

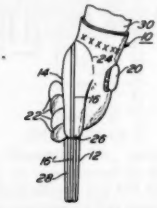
said playing surface; said disk having at least one aperture therein, eccentric to its axis of rotation, for movement of a playing ball therethrough; means, including a selectively manually actuable operating member, selectively operable to rotate said disk stepwise to position through a fixed increment of 360° said at least one aperture at different locations in said playing surface each time said member is actuated; and releasable latch means operable, responsive to each such stepwise rotation of said disk, to latch said disk with said at least one aperture in its new location in said playing surface.

3,848,873
INDICATORS FOR INDICATING ACCELERATIONS IN SPORTS EQUIPMENT WHICH ARE SWUNG IN USE
David Lees Linning, 26 Cinnamon Ln., Fearnhead Warrington, England
Filed Mar. 26, 1974, Ser. No. 454,903
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 A **8 Claims**



1. In combination with the shaft of an article of sports equipment which is swung in use, a lightweight indicator for indicating predetermined acceleration of the shaft, said indicator comprising a body part, a movable member part movable in the body part in response to accelerations of the shaft in directions transverse to the axis of the shaft during the swinging of the shaft, a stop member for arresting the movable member part, means on the body part for secure and demountable attachment of the indicator on said shaft and means for controlling the movement of said movable member part so that it moves, at a threshold level of the transverse acceleration, from a first rest position, through a neutral equilibrium position to a second rest position at said stop member and thereby produces mechanically an audible signal on impact with said stop member.

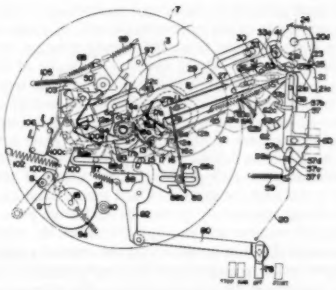
3,848,874
GOLF GLOVE, SYSTEM AND METHOD
Vance V. Elkins, Jr., 42 Hampton Dr., Freehold, N.J. 07728
Filed Oct. 25, 1972, Ser. No. 300,440
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 B **1 Claim**



1. A method for aiding an individual in properly gripping a golf club with a golf glove comprising the steps of

a. applying sighting indicia along a substantial portion of the length of the thumb portion of said golf glove,
b. said individual gripping a grip portion of the golf club with a hand wearing said golf glove,
c. observing the individual normally gripping said grip portion with the gloved hand,
d. positioning the individual's gloved hand to grip said grip portion of said golf club in a proper swing position,
e. providing removable indicia,
f. aligning said removable indicia with said sighting indicia and affixing said removable indicia to said grip portion, and
g. thereafter said individual gripping said club with the gloved hand and while sighting along a longitudinal extension of the golf club shaft aligning said sighting indicia with the removable indicia whereby the individual properly grips the club.

3,848,875
AUTOMATIC RECORD PLAYER
Seizo Miyoshi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 30, 1972, Ser. No. 310,708
Claims priority, application Japan, Dec. 6, 1971, 46-98781; Dec. 6, 1971, 46-98782; Dec. 6, 1971, 46-98783; Dec. 10, 1971, 46-100393; Dec. 10, 1971, 46-100394; Dec. 11, 1971, 46-100482; Dec. 7, 1971, 46-115157[U]; Dec. 7, 1971, 46-115158[U]; Dec. 11, 1971, 46-116972[U]; Dec. 9, 1971, 46-117075[U]; Dec. 9, 1971, 46-117076[U]; Dec. 9, 1971, 46-117078[U]; Dec. 9, 1971, 46-117079[U]; Dec. 8, 1971, 46-117082[U]; Dec. 8, 1971, 46-117083[U]; Dec. 8, 1971, 46-117084[U]; Dec. 8, 1971, 46-117085[U]
Int. Cl. G11b *17/08*
U.S. Cl. 274—10 R **8 Claims**



1. In an automatic record player, the combination which comprises a tonearm including a pickup stylus interchangeably carried thereby; a turntable; a turntable drive system comprising an electrical motor for rotating said turntable in one predetermined direction when said motor is operated; an operational mode control including a control knob manually movable to any one of start, manual and stop positions; an electrical switch for connecting a suitable power source to said motor; means rotatable between first and second positions and including a spring element for normally urging said rotatable means to said first position in which condition said switch is opened, said rotatable means being rotated to the second position when said control knob is moved either to the start position or to the stop or manual position to close said

switch thereby to operate said motor; pivotable means rotatable together with said tonearm connected therewith by means of a tonearm shaft and having a projection; a drive plate reciprocatable and including a cam member rigidly carried thereby at one end thereof; transmission means for transmitting a rotational force of said turntable to said drive plate for causing said drive plate to move in one direction during a first portion of an operation of said transmission means; a lifting rod having a lower end slidably engaging said cam member and an upper end for supporting said tonearm and operable in such a manner that, when said drive plate is moved in said one direction, said lifting rod shifts said tonearm upwardly and, when said drive plate is moved in said opposite direction, said lifting rod is allowed to downwardly shift; a record size selector comprising a selector knob movable among first, second and third detent stop positions, that are respectively associated with standardized diameters of **7, 10** and **12** inches of commercially available records, and at least one positioning plate having stepped edges corresponding to said detent stop positions of said selector knob, said positioning plate being pivotable in response to the movement of said drive plate in said one direction thereby to permit any one of said stepped edges, selected by the setting of said selector knob to the corresponding one of the detent stop positions, to be positioned in the path of angular travel of said projection of said pivotable means for enabling the pickup stylus to be automatically engaged in the lead-in groove of a record to be played; a detector plate relatively slidably carried by said drive plate, said detector plate being movable together with said drive plate when said control knob is moved to the stop position past the manual position and capable of undergoing a relative motion with respect to said drive plate, when said control knob is moved to the start position, in such a way that, after said drive plate is moved in a predetermined distance in said one direction, said detector plate is held stationary and said drive plate is permitted to further move in said one direction, said detector plate including a spring element for urging said detector plate in one direction whereby, after said drive plate has been moved a predetermined distance is said opposite direction said detector plate commences to move together with said drive plate further moving in said opposite direction; escapement means operable, when the control knob is moved to the start position to cuase said transmission means to undergo one cycle of the operation thereof, to rotate the tonearm in one direction from the resting position to another position immediately above the lead-in groove of the record to be played in response to the relative motion of said detector plate with respect to said drive plate, said tonearm after having played said record being returned to the resting position by said escapement means when said drive plate is moved in said one direction during a subsequent cycle of operation of said transmission means caused upon entry of the pickup stylus in the lead-out groove of said record, said escapement means being operatively carried by said drive plate adjacent to said cam member and also operable, when the control knob is moved to the stop position past the manual position while the record is being played, to immediately return said tonearm to the resting position in response to the movement of said drive plate in said one direction caused through said transmission means by manually moving said control knob to said stop position; means for causing the relative motion between said detector plate and said drive plate only when said control knob is moved to said start position; means for locking said rotatable means in said second position when said rotatable means is rotated to said second position; and a stop plate carried by the detector plate and frictionally rotatable between first and second positions, said stop plate being normally maintained in the first position when the relative motion between the detector plate and the drive plate does not take place and rotated to the second position when said relative motion takes place, said stop plate in said second position being capable of engaging with said locking means upon completion of the movement of said drive plate in said opposite direction thereby permitting said switch to be turned off with said rotatable means rotated to said first position.

3,848,876

SCANNING ELEMENT

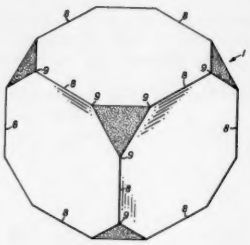
Gunter Joschko, and Hans-Jurgen Winter, both of Berlin, Germany, assignors to Ted Bidplatten Aktiengesellschaft AEG-Telefunken, TELDEC, Zug, Switzerland

Filed Sept. 29, 1972, Ser. No. 293,514

Claims priority, application Germany, Sept. 30, 1971, 2149439; Sept. 30, 1971, 7137567

Int. Cl. G11b *3/46*

U.S. Cl. 274—38 **17 Claims**



1. In a signal scanning means for scanning of signals stored on an information carrier which is moving with a velocity relative to the signal scanning means, the combination of a transducer body, and a scanning element attached to the transducer body for scanning signal-storing undulations on the surface of the information carrier, the scanning element comprising a diamond having natural crystal faces and at its tracing portion a rounded intersection of at least two natural crystal faces and at the intersection a sharply retreating trailing edge.

3,848,877

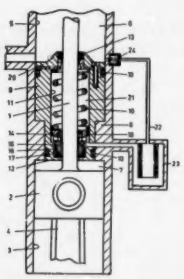
SEAL FOR PISTON ROD OF STIRLING ENGINE

John Ingemar Bengtsson, Eslov; Sven Anders Samuel Hakansson, Malmo; Sven Gunnar K:son Lundholm, Lund, and Lars Lonnberg, Bara, all of Sweden, assignors to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Division of Ser. No. 329,710, Feb. 5, 1973. This application Jan. 21, 1974, Ser. No. 435,186

Int. Cl. F16j *15/24;* **F16k** *39/00*

U.S. Cl. 277—3 **2 Claims**



1. A Stirling cycle hot gas engine having a sealing device about a movable piston rod in a region extending between a first working gas filled chamber at high cyclic gas pressure and a second crankcase chamber with oil therein to lubricate said piston rod and having gas therein at lower pressure, said sealing device comprising in combination, a resilient synthetic

plastic ring about said piston rod in said region conically tapered away from said rod on both ends, a pair of complementary metal ring wedges tapered toward said rod and mating with the ring on opposite sides thereof to urge said ring toward said rod thereby to engage it at a position lubricated by said oil, spring means loading the rings in the axial direction of the rod, and a gas flow return conduit including a one way valve connecting said region to said high pressure chamber to provide a flow path for gases toward said high pressure chamber and tending to maintain in said region a gas pressure at the lower cyclic pressure.

3,848,878

DEVICE FOR PRODUCING A SERIES OF ELECTRICAL PULSES, WHOSE FREQUENCY IS PROPORTIONAL TO THE SPEED OF ROTATION OF THE WHEEL OF A MOTOR VEHICLE

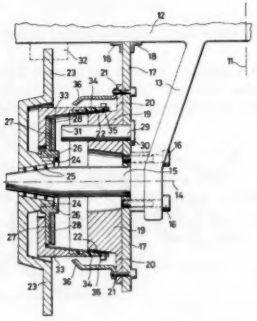
Friedrich Mayer, Augsburg, Germany, assignor to Allegemeine Industrie Commerz, Munchen, Germany

Filed Sept. 25, 1973, Ser. No. 400,531

Claims priority, application Germany, Oct. 2, 1972, 2248274

Int. Cl. F16j *15/16*

U.S. Cl. 277—25 **2 Claims**



1. A device for producing a series of electric pulses, whose frequency is proportional to the speed of rotation of a motor vehicle wheel having a brake element associated therewith and which is to be monitored as regards its braking behavior, characterized by a concentric ring, which is fixed to the chassis of the vehicle and is concentric to the wheel axis, the ring having a conical outer surface, a sleeve-shaped body which is also concentric with respect to the wheel axis and which is fixed to the brake element, and a ring which consists of wear-resistant elastic plastics material and is fixed at the edge of the sleeve-shaped body, the latter ring having a conical inner surface, and having on its outer surface a number of centrifugal weights in such a manner that the inner surface of the plastics material ring rubs or engages the conical outer surface in the case of low speeds of rotation of the wheel, while in the case of higher speeds of rotation of the wheel it moves clear of the outer surface.

3,848,879

SHAFT SEAL

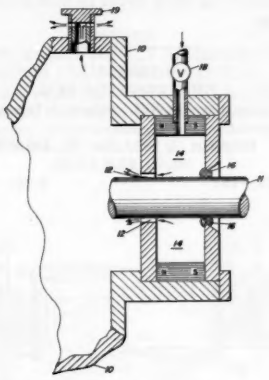
Wayne A. Hudgins, Hampton, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 19, 1972, Ser. No. 316,646

Int. Cl. F16j *9/00*; **E21b** *33/00*

U.S. Cl. 277—80 **4 Claims**

1. In combination with a gearbox/transmission housing or the like containing a liquid lubricant and having a shaft extending from within; a ferrofluid magnetic sealing means interposed between the shaft and housing and encircling the shaft at the point of exit from the housing; a pressurized air supply cavity spaced axially inward next to the said ferrofluid



magnetic sealing means; and a controlled clearance labyrinth seal spaced axially inward next to the pressurized air supply cavity, thereby preventing the said internally contained liquid lubricant from contacting the said ferrofluid magnetic sealing means.

3,848,880

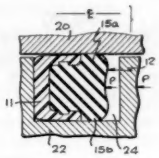
FLUID SEAL

Charles L. Tanner, Los Angeles, Calif., assignor to Tanner Engineering Company, Los Angeles, Calif.

Filed June 9, 1972, Ser. No. 261,267

Int. Cl. F16j *9/00*

U.S. Cl. 277—176 **9 Claims**



1. A fluid seal for sealing between two members having contiguous surfaces, one of which has an annular groove juxtaposed to the other surface, said seal comprising:

a first continuous annular sealing ring positioned in the groove and having a substantially U-shaped cross sectional configuration including a body portion positioned to abut the low pressure side of the groove and a pair of substantially parallel leg portions positioned repectively adjacent the base of the groove and the other surface with no initial interference; and

a second coaxial continuous annular sealing ring having first and second body portions made of resilient flowable material positioned in said groove, said first body portion being positioned in engaging relationship between said first ring's leg portions, said second body portion having a greater radial width in the free state than the radial width of the first annular ring, said second body portion including projections extending in their free state sufficiently beyond said first ring's leg portions such that when installed said projections bear respectively against the

other surface and the base of the groove and are exposed to the high pressure side of the groove, said legs normally being out of contact with the surfaces, said legs being constructed to spread progressively into full engagement with said surfaces upon said resilient flowable material of said second ring being forced by fluid pressure between said legs.

3,848,881

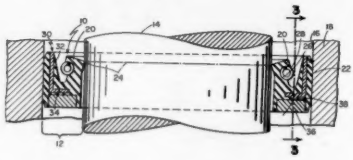
HIGH PRESSURE SEAL

Arthur H. Ginn, Laconia, N.H., assignor to International Packings Corporation, Bristol, N.H.

Filed Oct. 3, 1973, Ser. No. 402,979

Int. Cl. F16j *15/32*

U.S. Cl. 277—181 **3 Claims**



1. A radial seal for shaft-to-bore sealing against a high pressure fluid medium comprising an integral annular body formed from an elastomeric material having a maximum radial dimension at least as great as the shaft-to-bore gap; a first rigid reinforcing member comprising a generally axial first portion at least partially enclosed by said body and an integral second portion enclosed by said body and projecting radially inwardly from said first portion; and a second rigid reinforcing member at least partially enclosed by said body and including an annular surface facing said first reinforcing member second portion, said first reinforcing member second portion contacting said surface at a plurality of spaced apart locations thereby providing spaces therebetween which are filled with said elastomeric material.

3,848,882

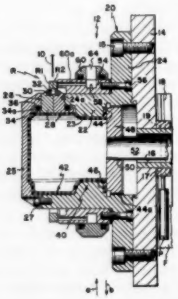
RING CHUCKING APPARATUS

Edward F. Sullivan, 4465 Bradford St., Saginaw, Mich. 48603

Filed Nov. 20, 1972, Ser. No. 308,178

Int. Cl. B23b *31/10, 31/30*

U.S. Cl. 279—4 **13 Claims**



1. Ring chucking apparatus for holding piston rings and the like, to be axially divided into at least two ring parts by a cutting blade at a ring cutting station, comprising:

a support body;

a plurality of circumferentially spaced, ring holding chuck jaws mounted on each body for movement between radially inner, ring receiving and releasing positions in which an undivided ring is received and divided ring parts are released, and radially outer ring gripping positions, each of said chuck jaws including a pair of axially spaced independently movable jaw portions, engageable with axially opposite end portions of a ring to be divided, said jaw portions being separated by an axial gap for receiving the cutting blade after it has cut a ring into two ring parts; and

radially expansible and contractible means, movable between collapsed and expanded conditions, for moving said chuck jaw portions between said radially inner ring receiving and releasing positions and said radially outer ring clamping positions.

3,848,883

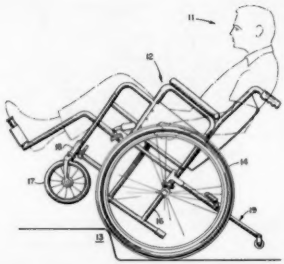
WHEELCHAIR ANTI-TIP APPARATUS

Stephen J. Breacain, 3260 Delaware St., Oakland, Calif. 94602

Filed Aug. 8, 1973, Ser. No. 386,736

Int. Cl. B62b *5/02*

U.S. Cl. 280—5.32 **15 Claims**



1. In combination with a wheelchair having main rear wheels, an anti-tip apparatus comprising:

horizontal member means secured to the frame of said wheelchair adjacent the axes of rotation of said wheels and extending laterally and rearwardly of said wheels of said wheelchair in normally parallel relation to a ground surface; and

extension member means slidably secured to said horizontal member means and extensible to a position rearwardly of said wheels for preventing excessive rearward tipping of said wheelchair.

3,848,884

WHEELED TROLLEY

Walter M. Lines, Selsfield House, East Grinstead, Sussex; Alfred N. Alsop, 227 London Rd., Morden, Surrey, and Edgar A. Ross, "Hurdles" Granvilk Rd., Limpsfield, all of England

Filed Dec. 29, 1972, Ser. No. 319,460

Claims priority, application Great Britain, Jan. 3, 1972, 147/72

Int. Cl. B62b *1/00*

U.S. Cl. 280—36 B **11 Claims**

1. A folding wheeled frame for a pushchair comprising

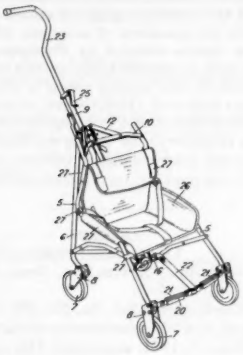
an upwardly extending backbone,

two front and two rear upwardly extending supports, each of which carries a wheel at its lower end,

separate pivotal links connecting each of said supports adjacent their lower ends to a first fixed point near the lower end of said backbone,

additional separate pivotal links connecting each of said front supports to a second fixed point on said backbone above the lower end of said backbone,

a mounting movable longitudinally along said backbone above said second fixed point and



a pivotal connection between each of said supports and said mounting,

whereby upward movement of said mounting relative to said fixed points will draw said supports upwardly and inwardly toward said backbone as said links swing about said fixed points.

3,848,885

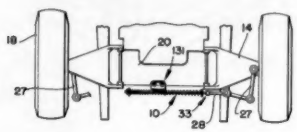
STABILIZER APPARATUS FOR ROAD VEHICLES

Fred W. Hefren, 3814 Eisenhower, Odessa, Tex. 79762

Filed Dec. 10, 1973, Ser. No. 422,998

Int. Cl. B62d *7/08*

U.S. Cl. 280—94 **10 Claims**



1. In a road vehicle, provided with a running gear in the form of a wheel suspension system with one of the wheels being a steering wheel mounted for horizontal turning about a turning axis by a pitman arm connected thereto, and having a steering system which includes a rod assembly connected for moving the pitman arm, the improvement comprising:

a steering gear stabilizer apparatus for resisting turning movement of the steering wheel about the turning axis; said stabilizer apparatus comprising a single fixed mounting bracket, a shaft having opposed ends, compression springs, a universal joint, spring retainers, and a movable mounting bracket;

means by which said shaft is reciprocatingly received in supported relationship respective to said fixed mounting bracket;

said springs being spaced from one another by said fixed mounting bracket;

said spring retainers being affixed to opposed ends of said shaft in a position to bias each of said springs towards said fixed mounting bracket;

said universal joint connecting one end of said shaft to said movable bracket;

means by which said movable mounting bracket is affixed to said steering system; means by which said fixed mounting bracket is connected in fixed relationship with respect to said movable bracket;

so that turning movement of the wheel about the turning axis is resisted by one of said compression springs.

3,848,886

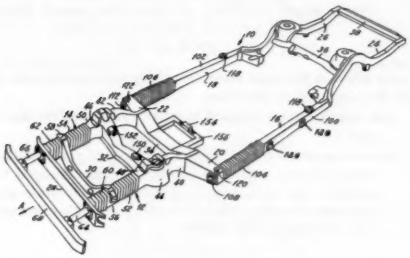
BODY SUPPORT AND IMPACT ABSORBING FRAME SYSTEM FOR A MOTOR VEHICLE

James R. Feustel, Taylor; Kenneth L. Hoyt, Farmington, and Jonas Valukonis, Detroit, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 5, 1972, Ser. No. 295,379

Int. Cl. B62d *21/14*

U.S. Cl. 280—106 R **19 Claims**



1. An energy absorbing system for a motor vehicle comprising:

a vehicle frame assembly having plastically deformable energy absorbing sections,

a vehicle body,

primary and secondary mounting means supporting said body on said frame assembly,

said primary mounting means including resilient elements constructed to attenuate the transmission of noise and vibration from said frame assembly to said vehicle body, said secondary mounting means being inoperative during normal operation of said vehicle,

said primary mounting means being deflectable under the inertia load of said body in the event a major impact is imposed upon said frame assembly,

said secondary mounting means being constructed to hold said body on said frame assembly upon deflection of said primary mounting means whereby said inertia load of said body is imposed upon said energy absorbing sections of said frame assembly,

said secondary mounting means including a plurality of pairs of juxtaposed spaced abutment means,

one of said abutment means of each of said pair being connected to said frame assembly and the other abutment means of each of said pair being connected to said body, said pairs of abutment means being constructed to limit the longitudinal displacement of said body with respect to a portion of said frame assembly when said primary mounting means deflects under said inertia load.

3,848,887

INFLATABLE SAFETY BELT

John William Fox, Ashtead, England, assignor to Project Laboratories Limited, London, England

Filed Apr. 25, 1972, Ser. No. 247,491

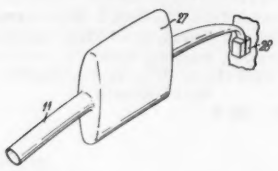
Claims priority, application Great Britain, Nov. 15, 1971, 53014/71

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **6 Claims**

1. A restraint system for restraining an occupant of a vehicle in the event of sudden deceleration, said system comprising:

at least one hollow inflatable strap member in the form of a hose having a closed hose wall, said strap member being adapted to be secured at its ends and to extend across part of the occupant of the vehicle, said hose being formed of elastic material having greater elasticity in the radial direction than in the longitudinal direction, whereby said hose will expand in width on inflation to a width substantially greater than its uninflated width in order to provide cushioning for the occupant while at the same time expanding substantially not at all in the longitudinal direction;



gas supply means adapted to supply gas to inflate the hose; and

control means for controlling the supply of gas from the gas supply means, said control means being arranged to respond to an impact causing sudden deceleration and to operate said gas supply means independently of tension in said inflatable strap member.

3,848,888

SEATBELT RETRACTOR

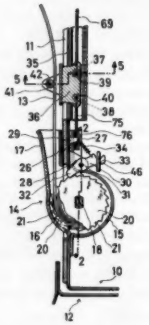
Kenichi Kazaoka, Nagoya; Kimiharu Hirose, Oobu; Hisao Matsumoto, Chita, and Yasuo Takeshita, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi Pref., Japan

Filed Sept. 25, 1972, Ser. No. 292,152

Claims priority, application Japan, Sept. 25, 1971, 46-74914

Int. Cl. B60r *21/02*

U.S. Cl. 280—150 SB **5 Claims**



1. A seatbelt retractor for a vehicle having a vehicle body and a vehicle door hinged thereto comprising a seatbelt reeling-up means mounted on said door and having a rotatable shaft biased in a belt retracting direction, a seatbelt securable to said body at one end and mounted on said shaft at the other end, and a belt-extending locking means movable in response to the opening and closing movement of said door so as to automatically lock the movement of said reeling-up means when said door is closed,

said locking means comprising ratchet wheel means rotatably mounted on said shaft, pawl means engageable with said ratchet wheel means, control means mechanically connected to said pawl means thereby controlling engagement of said pawl with said ratchet wheel means, and mechanical means connected to said control means and adapted to releasably engage the vehicle body in association with the movement of said door, whereby said mechanical means actuated by disengagement from the vehicle body in response to the opening movement of said door controls said control means to thereby disengage said pawl from said ratchet wheel means and said mechanical means actuated by engagement with said vehicle body in response to the closing movement of said door controls said control means to thereby complete engagement of said pawl with said ratchet wheel means.

3,848,889

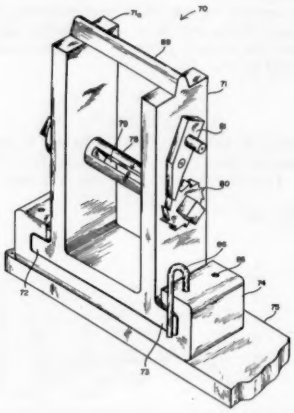
LOAD FASTENERS

Clarence C. Sharrow, 121 11th Ave., South St. Paul, Minn. 55112

Continuation-in-part of Ser. No. 260,248, June 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 120,546, March 3, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,643

Int. Cl. B60p *7/00*

U.S. Cl. 280—179 A **8 Claims**



1. A heavy duty load fastening device, comprising:

a housing adaptable for detachably mounting on a carrier, said housing including a first side member and a second side member, said first side member spaced from said second side member to provide an opening between said first side member and said second side member for a chain sprocket wheel;

said chain sprocket wheel having a peripheral surface with a plurality of recesses therein for receiving and positively engaging the links of a chain, said chain sprocket wheel rotatably mounted in the space between said first side member and said second side member;

a chain holding member, said chain holding member mounted on said first side member and said second side member, said chain holding member located in the space between said first side member and said second side member, said chain holding member having a peripheral surface for holding said chain links in an edgewise position, said chain holding member spaced sufficiently close to said peripheral surface of said sprocket wheel to hold at least one of said chain links securely in at least one of said plurality of recesses in said chain sprocket wheel;

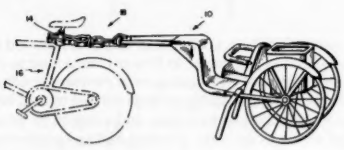
a ratchet member rigidly connected to said sprocket and rotatably mounted on said housing; and

a pawl mounted on said housing for forming interlocking engagement with said ratchet member to thereby prevent rotation of said ratchet member and said sprocket wheel in at least one direction when said pawl is in interlocking engagement with said ratchet member.

3,848,890
COUPLING FOR CONNECTING TANDEM TRAILER TO BICYCLE

Alexander D. MacAlpine, 50 N. Main St., Natick, Mass. 01760

Filed Feb. 1, 1973, Ser. No. 328,523
Int. Cl. B60d *1/12*
U.S. Cl. 280—204 7 Claims

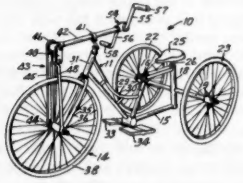


1. A coupling for connecting the loop at the end of the draw bar of a tandem trailer to the seat post of a bicycle frame comprising a clamp adapted to be clamped to the seat post, a link pivotally connected at one end to the clamp for rolling about a roll axis, a post fixed to the other end of the link on which the loop is adapted to be pivotally mounted for swivel movement, a jaw comprising a part pivotally mounted on the link adjacent to post, said jaw having a part at its end for engagement with the loop containing a hole for receiving said post and a fail safe hook disposed at the inner side of the loop and means mounted on the jaw for releasably holding said part in engagement to loop, with the hook disposed at the inner side of the loop and with the hole engaged with the post.

3,848,891
FRONT WHEEL DRIVE CYCLE

Angelo James Vittori, 529 Northwest 9th St., Chisholm, Minn. 55719

Filed Aug. 6, 1973, Ser. No. 385,980
Int. Cl. B62m *1/14*
U.S. Cl. 280—250 11 Claims



1. A cycle comprising:

a frame;

rear wheel means rotatably mounted on a rear portion of the frame;

front wheel means, means mounting the front wheel means on a front portion of the frame, said means mounting the front wheel means being rotatable about a generally upright axis to steer the cycle;

seat means mounted on the frame;

tiller means releasably and adjustably secured to the means mounting the front wheel means, said tiller means being longitudinally adjustable relative to said mounting means and having a first portion extended in a forward direction and a second portion extended in a rearward direction from said mounting means;

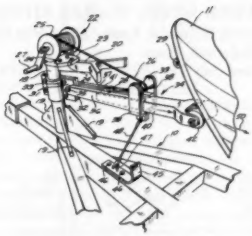
support means connected between the first portion of the tiller means and the means mounting the front wheel means, said support means and said tiller means being of fixed length.

drive means having a first drive linkage drivably connecting the front wheel with the forward portion of the tiller means and a second drive linkage connecting the first drive linkage and the rear portion of the tiller means, and means for imparting torque to the rear portion of the second drive linkage.

3,848,892
BOAT TRAILER ATTACHMENT

Gerard S. Reder, 467 North St., Pittsfield, Mass. 01201

Filed June 18, 1973, Ser. No. 371,110
Int. Cl. B60p *3/10*
U.S. Cl. 280—414 R 9 Claims



1. An attachment for use with a boat trailer having an upstanding post, a winch mounted on said post, and a rope wound on the winch, said attachment comprising:

a. an elongated pusher arm longitudinally extensible and retractable, said pusher arm having two ends movable toward and away from each other in the longitudinal direction of said pusher arm,

b. means for coupling an end of said arm to the post, the other end of said arm being adapted for engagement with the bow of a boat mounted on the trailer,

c. means for securing an end of the rope to said arm, and

d. rope support means spaced from said post for reversing the direction of the rope between its said end and said winch,

whereby winding the rope on to the winch causes said rope end to apply a force to said arm in a direction away from the post so that said arm is extended and its said other end can push a boat rearwardly with respect to the trailer.

3,848,893
DUAL TRAILER HITCH ATTACHMENT

James M. Patterson, 15246 E. Weeks Dr., La Mirada, Calif. 90638

Filed May 18, 1973, Ser. No. 361,457
Int. Cl. B60d *1/06*
U.S. Cl. 280—417 2 Claims

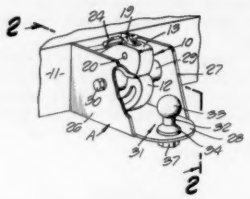
1. As an article of manufacture, an attachment for converting a towing vehicle trailer hitch of the coupling-pintle type to a ball-and-socket type, comprising:

a. a body structure;

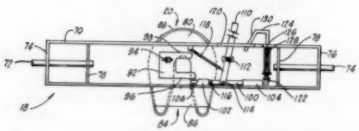
b. a pintle carried by said body structure adapted for pulling connection with a trailer hitch coupling;

c. a component of a ball-and-socket hitch carried by said body, adapted for pulling connection with a mating component of a ball-and-socket hitch; and

d. said body being of U-shaped configuration with spaced side walls and a bridging bottom wall, the inner edges of said walls being adapted to engage an outer surface of the towing vehicle and being adapted to straddle the coupling of the trailer hitch, the pintle being supported at its ends in the side walls.



3,848,894
FIFTH WHEEL TRAILER HITCH
Glenn H. Breford, Holyrood, Kans., assignor to Midway Industries Inc., Holyrood, Kans.
Filed July 16, 1973, Ser. No. 379,713
Int. Cl. B62d *53/06*
U.S. Cl. 280—437 **7 Claims**



1. A trailer hitch mountable in the bed of a truck on the bottom thereof, comprising:

a. a frame having spaced upright end portions, said upright end portions each having in the upper portion thereof means to pivotally receive and mount a shaft,

b. a cross member attached to said end portions substantially below the top edge thereof and joining said end portions,

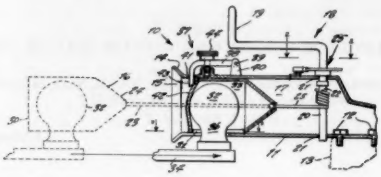
c. a second cross member, said second cross member having shaft mounting means in the end portions thereof, the shafts thereof being pivotally and oppositely mountable in the mounting means in the upper portions of said upright end portions of said frame,

d. coupling means mounted on the upper side of said second cross member and constructed and adapted to receive and mount in towing relation cooperating coupling means on a trailer or thhe like, and

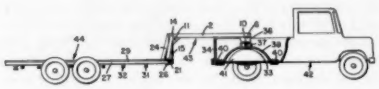
e. said coupling means has a entrance slot in said second cross member, a jaw member movably mounted with said second cross member, a locking bolt slidably mounted to secure said jaw member in an operating position and a second locking bolt slidably mounted to in use secure said first named locking bolt when said first named locking bolt is securing said jaw member.

3,848,895
ANY ANGLE HITCH ATTACHMENT
Roland L. Christopher, Creston Star Rt., Paso Robles, Calif. 93446
Filed Sept. 18, 1973, Ser. No. 398,482
Int. Cl. B60d *1/16*
U.S. Cl. 280—478 R **5 Claims**

1. In a trailer hitch, in combination: a trailer tongue and a coupling ball having a reduced neck secured to and projecting upwardly from said tongue; a socket having a bottom opening through which said ball is freely receivable to couple said ball and socket; a tubular housing attachable to a towing vehicle, said housing having at its rear end an open mouth for entry of the coupled ball and socket, and having in its bottom a longitudinal slot in open communication with said mouth so as to receive said reduced neck while said socket is received in said housing, said socket having at its forward end a nose so related to said open mouth of the housing as to provide for easy entry of the socket into the housing; a winch carried by said housing, and a cable attached to said nose and adapted to be wound upon said winch to draw the coupled ball and socket into the housing.



3,848,896
TRAILER HITCH ASSEMBLY
Sam Dennis, 300 Winkles St., Elyria, Ohio 44035
Filed Oct. 1, 1973, Ser. No. 402,124
Int. Cl. B62d *53/00*
U.S. Cl. 280—423 R **2 Claims**



1. An improved trailer hitch assembly member for connecting a twin I-beam frame trailer to a pick-up truck, or the like, comprising:

a. an expanded L-shaped tongue structure member, a first end portion of said tongue structure member uniquely affixed to the front end portion of a twin I-beam frame trailer is constructed of vertical twin I-beam tongue structure members being affixed perpendicularly to the forward end portion of the upper flange areas with their web sections aligned in a plane with the web sections of twin I-beam frame trailer members extended forwardly beyond the forward face of a horizontal perpendicularly adjoined channel trailer frame member and to the upper forward face area of said channel trailer frame member;

b. I-beam tongue structure base members affixed to the forward face area of said channel trailer frame member and perpendicularly to said twin I-beam trailer frame members at their inner sides with the flange faces of said base member aligned in horizontal planes with the flange faces of said twin I-beam trailer frame members;

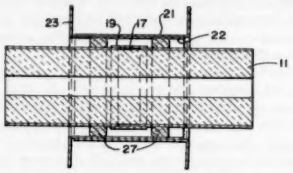
c. twin I-beam tongue structure members outwardly spaced with their web sections in parallel planes with respect to said vertical twin I-beam tongue structure members affixed to the upper and forward flange areas of said outwardly extended base members and extending forward so that the upper ends are aligned with the upper ends of said vertical twin I-beam tongue structure members;

d. tongue structure braces affixed to the upper rearward flange areas of said vertical twin I-beam tongue structure members and extending rearward at an appropriate angle with the opposite ends affixed to the upper flange face areas of said twin I-beam trailer frame members.

3,848,897
THERMAL SHIELD

William McClellan, 151 N. Autumn, San Jose, Calif. 95110

Filed Dec. 26, 1973, Ser. No. 427,920
Int. Cl. F16l 59/14
U.S. Cl. 285—47 10 Claims



1. A thermal shield surrounding a fixture running through a hole in a wall, said thermal shield comprising

a pair of rigid mating insulators forming a cylinder closely surrounding said fixture,

a pair of metal shields encasing said insulators, the first of said shields partially circumscribing the external surface of said mating insulators, said first of said shields provided with longitudinal edge portions, and the second of said shields circumscribing both the external surface of said insulators not circumscribed by the first of said shields and the longitudinal edge portions of said first shield so that said first shield is captured by said second shield and the pair of said shields in combination extend completely around and closely surround the external surface of said insulators holding them in mating relation, said shields being placed into captured relation by sliding the second of said shields onto the longitudinal edge portions of the first of said shields in a direction generally parallel to the fixture,

a pair of asbestos ropes surrounding said shields in sealing relation at opposite ends thereof, said ropes being coated with a protective material to prevent the asbestos from flaking and crumbling, and

a pair of elongated flanged tubular members disposed in the hole in the wall through which the fixture passes, said tubular members surrounding said fixture, said shields, and said insulators, the flanges of said tubular members being attached to opposite sides of the wall respectively, and said tubular members sealingly and slidingly engaging with the respective ropes disposed around the opposite ends of said shields.

3,848,898
CONNECTOR FOR USE BETWEEN AN UNDERWATER WELLHEAD AND A BEARING SURFACE

Philippe De Panafieu, Holland Pk. W11, London, England, and Edward Earl Castor, P.O. Box 9163, Houston, Tex. 77011

Filed Apr. 9, 1973, Ser. No. 349,582
Claims priority, application France, Apr. 7, 1972, 72.12238
Int. Cl. F16l 3/02
U.S. Cl. 285—61 8 Claims

1. A connector assembly for joining pipe casings in an underwater wellhead, comprising:

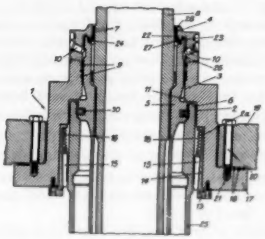
a. a generally cylindrical inner casing,

b. a generally cylindrical intermediate casing concentric with and surrounding the inner casing over part of the length thereof,

c. a generally cylindrical outer casing concentric with and surrounding the intermediate casing over part of the length thereof, means on the inner, intermediate, and outer casings forming a nested assembly of said casings, said nested assembly presenting, in cross-section, two inwardly oriented steps, one above the other, defined by the tops of the intermediate and outer casings, respectively,

d. a tubular body having upper and lower generally cylindrical inner surface enlargements defining a cross-section profile generally conforming to the cross-section of the assembled inner, intermediate, and outer casings, the upper enlargement having a smaller diameter than the lower enlargement,

e. an annular support surface on the intermediate casing defined by an annular step located at a height at least as



great as the height of the outer casing,

f. an annular bearing surface on the tubular body defined by a perpendicular step between the upper and lower enlargements and engaging the support surface,

g. extendable locking means mounted in the tubular body adjacent and extending into the upper enlargement,

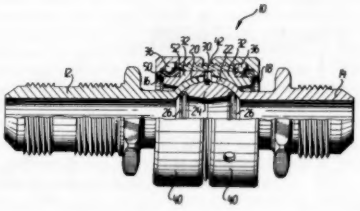
h. means in the intermediate casing for receiving the locking means, whereby the tubular body is secured to the intermediate casing, and

i. wedging means secured to the tubular body within the lower enlargement and engaging the outer casing whereby the tubular body is clamped to the outer casing.

3,848,899
PNEUMATIC SWIVEL ASSEMBLY

Jack Edward Smith, Whittier, Calif., assignor to Dumont Aviation Associates, Lakewood, Calif.

Filed Feb. 16, 1973, Ser. No. 333,132
Int. Cl. F16l 17/00
U.S. Cl. 285—98 2 Claims



1. A swivel assembly for joining a plurality of fluid conduits comprising:

a. housing assembly means having first and second openings therein and including means adapted to movably engage and retain said conduits in adjacent relationship;

b. a first conduit including an inner fluid passageway diameter and including a first end comprising a partially spherical shape flared radially from an axis of said first conduit, said first spherically shaped end further comprising an annular edge, said first end selectively movably mounted within said housing assembly means;

c. a second conduit including an inner fluid passageway diameter and including a second end comprising a partially spherical shape flared radially from an axis of said second conduit, said second spherically shaped end further comprising an annular edge, said second end selectively movably mounted within said housing assembly means;

d. a ball-rotator comprising a concentric surface spherically complemental to a surface of said first and said second spherically shaped flared ends and in engagement therewith, said ball-rotator further including two annular lips having a diameter substantially larger than said inner diameter of and adjacent of said conduits, each of said lips disposed in movable, fluid sealing contact with a respective flared end of said first and said second conduits said ball-rotator having a bore therethrough with a minimum diameter at least as large as said passageway diameters, said annular lips and said bore defining a passageway in pneumatic coupling relationship with said first conduit and said second conduit;

e. said ball-rotator having an annular ring including an axis, and being mounted on said spherical surface engageable with the annular edge of said first flared end and of said second flared end; and

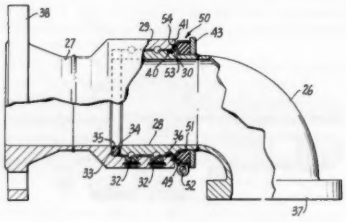
f. said annular edge of said first flared end, said annular ring and one of said annular lips having a predetermined angular relation when the axes of said first conduit and of said annular ring are coincidental, the angular relation being that the angular distance from said annular ring to the said first spherically shaped end annular edge substantially equaling the angular distance from said first spherically shaped end annular edge to said annular lip disposed in contact with said first conduit flared end, and further substantially equaling the angular distance from said annular lip to the end of said first conduit inner diameter whereby upon maximum misalignment of either conduit relative to said ball-rotator, the inner diameter of said conduit is not constricted by said ball-rotator.

3,848,900

EXTERNAL ROTARY SEAL FOR A SWIVEL JOINT

Ben W. Brundage, 4390 Piedmont Ave., Oakland, Calif. 94611

Filed Aug. 17, 1973, Ser. No. 389,328
Int. Cl. F16j *17/00, 33/16*
U.S. Cl. 285—98 **2 Claims**



1. In a swivel joint:

a. a first cylindrical member having a tubular portion terminating in an end;

b. a second cylindrical member having an end rotatably mounted within said tubular portion of the first member;

c. bearing means mounting and retaining said end of the said second member for rotation in the tubular portion of the first member with the end of the tubular portion of said first member fitting closely adjacent to but spaced from the second member to provide an annular space between the said first and second members;

d. a resilient sealing means carried in the end of the first cylindrical member adjacent said annular space;

e. a shoulder on the said second member immediately adjacent said end of the said first cylindrical member and disposed substantially in the same radial plane therewith whereby to provide a substantially continuous surface including the said end of the said first cylindrical member and the said shoulder;

f. a washer lying against said sealing means in the end of the said first cylindrical member and against the shoulder of the said second member and extending across the annular space therebetween;

g. a resilient ring member fitted in a groove about said second member and engaged with the said washer;

h. a stop secured to the said second cylindrical member on the side of said resilient ring member opposite from said washer and engaged with the said resilient ring member whereby to prevent the resilient ring member from sliding away from the said washer; and

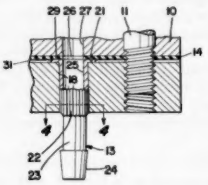
i. a means for compressing said ring member to force the ring into engagement with said washer.

3,848,901

FLUID LINE JOINT FOR A VALVE BASE PLATE

Robert K. Hoffman, Plainwell, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed July 9, 1973, Ser. No. 377,209
Int. Cl. F16l *39/00*
U.S. Cl. 285—137 R **4 Claims**



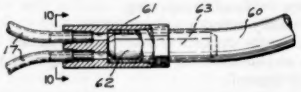
1. A joint comprising a fluid line fitting and a base plate, the base plate having a bore therethrough, the fitting having a bore therethrough and also having a radially outwardly extending flange at one end thereof, the fitting also having a shank adjacent the flange that is press fitted into said plate bore, said flange being in engagement with a face of the plate at a location surrounding said plate bore, and said engagement being maintained by said press fit.

3,848,902

LINE COUPLING

Henry J. Modrey, 930 Camellia Dr., Royal Palm Beach, Fla. 33406

Filed Aug. 16, 1972, Ser. No. 281,120
Int. Cl. F16l *39/02*
U.S. Cl. 285—137 R **9 Claims**



1. A device for sealingly coupling a flexible tubing to a receiver, said coupling device comprising in combination:

a flexible tubing;

a springy tubular member capable of diametrical contraction and expansion along its entire length, said member being dimensioned to be insertable into the tubing in its expanded state;

a receiver including an elongate receiving opening having a cross-sectional outline slightly less than the outer peripheral outline of the tubing, the length of said springy tubular member being at least equal to the length of the receiving opening, said receiving opening connecting at its bottom end with a duct opening in the receiver;

insertion of the tubing with the spring member therein into the receiving opening causing a contraction of the tubular member along its entire length against the springy action thereof whereby the resulting pressure against the inner wall of the tubing as generated by the contraction of the tubular member presses the respective lengthwise wall portion of the tubing against the surrounding wall of the receiving opening in sealing engagement therewith.

3,848,903

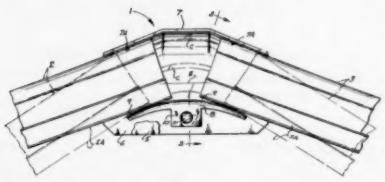
ADJUSTABLE ELBOW FOR SPLIT CONDUIT

Frank R. Kinnan, P.O. Box 445, Camas Valley, Oreg. 97416

Filed June 22, 1973, Ser. No. 372,479

Int. Cl. F16l *43/00*

U.S. Cl. 285—179 **3 Claims**



1. An elbow for joining the ends of conduit in a desired angular relationship, said elbow comprising,

a main body of U-shaped configuration and having opposed sidewalls and a bridge portion interconnecting the sidewalls, said bridge portion having wall surfaces inclined relative to the longitudinal centerline of the main body, said inclined wall surfaces being engageable with the conduit end portions,

a clip intermediate said sidewalls and adapted to also bear upon the conduit end portions, and

fastener means acting on said sidewalls to bias same inwardly into contact with the conduit end portions thereby holding same in fixed relationship at the desired angular relationship therebetween.

3,848,904

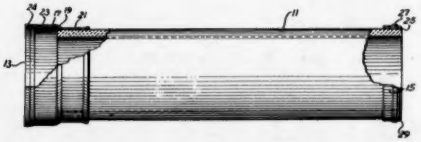
PIPE HAVING COUPLING MEANS

Richard H. Anderson, Dover, Ohio, assignor to Clow Corporation, Oak Brook, Ill.

Filed Jan. 22, 1973, Ser. No. 325,952

Int. Cl. F16l *49/00*

U.S. Cl. 285—230 **10 Claims**



1. A length of pipe adapted to be joined end-to-end to a similar pipe without additional components to form a liquid-tight line, which pipe comprises a generally uniform tubular member, the outside surface adjacent the one end of said tubular member which serves as the spigot end of said pipe having a circumferential sealing band sealingly attached thereto, the radially outermost surface of said band being disposed a predetermined radial distance from the outside surface of said member, the other end of said tubular member having a sleeve of elastomeric thermoplastic material affixed to the outside circumferential surface of said member in liquid-tight relationship thereto as a result of having been heated and then forcibly expanded while hot during mounting upon said member, and a polymeric resin material coating the outer surface of said tubular member in the region of said sleeve, said sleeve having a portion extending a predetermined axial distance beyond the other end of said member which is larger in diameter over its entire length than the remainder of said sleeve, said extension portion having an inner diameter which is slightly smaller than the diameter of said sealing band, and said elastomeric extension portion being resiliently deformed radially outwardly when the band-carrying spigot end of another pipe length is pushed thereinto so that a narrow liquid-tight seal is formed between said band outermost surface and the inner surface of said sleeve extension portion.

3,848,905

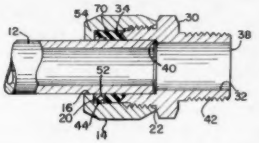
HIGH PRESSURE FITTING

Victor S. Hammer, Glen Ellyn, and Chester W. Brozek, Chicago, both of Ill., assignors to Chicago Fittings Corporation, Broadview, Ill.

Filed Apr. 3, 1972, Ser. No. 240,533

Int. Cl. F16l *13/02*

U.S. Cl. 285—286 **12 Claims**



1. A fitting for joining a first member to a second member, which has a passageway therein to receive an insertion end and accompanying portion of the first member, comprising:

ferrule means having a flange portion extending outwardly from the first member in a direction generally transverse to the axis of the first member and a sleeve portion conformed to the shape of the outer circumference of the first member and extending axially therealong, said flange portion being affixed to said sleeve portion at the end thereof furthermost from the insertion end of the first member, said ferrule means located on the outer surface of the first member, at a predetermined distance in the axial direction from the insertion end of the first member, and joined to the first member in such a fashion as to be fixedly anchored thereto at said predetermined distance from the insertion end of the first member;

deformable sealing means positioned about the circumference of the first member between the insertion end thereof and said flange portion of said ferrule means;

a coupling nut extending over said sealing means and said flange portion of said ferrule means, said coupling nut having a radially inwardly extending shoulder positioned with said flange portion of said ferrule means between said shoulder and the insertion end of the first member, and said coupling nut having threads formed on the inner circumference thereof adjacent the insertion end of the first member;

threads formed on the external surface of the second member to mesh with said threads formed on said coupling nut;

a sealing means engaging structure on the end of the second member through which the first member is inserted, meshing of said threads on said coupling nut and on the second member causing said sealing means engaging structure to compress said sealing means against said flange portion of said ferrule means to form a fluid tight seal; and

a fillet between said sleeve portion and said flange portion to aid in securing proper deformation of said sealing means by directing said sealing means outwardly along said flange portion to bear against the inner surface of said coupling nut to form a stronger radial seal.

3,848,906

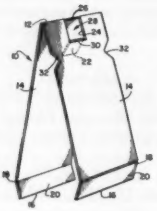
DISPOSABLE TONGS

Seymour Fleishman, 857 W. Belden Ave., Chicago, Ill. 60614

Filed Feb. 23, 1973, Ser. No. 335,233

Int. Cl. A47l *13/52*

U.S. Cl. 294—1 R **1 Claim**



1. Disposable tongs which are adapted to pick up animal excrement and are formed of a single sheet of material, such as cardboard or the like of generally rectangular shape, having a single central transversely extending straight score line and folded on said score line to form a first hinge line and form a pair of side members which are hingedly connected at said first fold hinge line, said first fold line forming a sharp pointed top fold edge with said side members being flat and extending downwardly and away from each other in opposite angular directions from said sharp pointed top fold edge hinge line, each said flat side member having a bottom edge and a transversely extending score line spaced upwardly of the bottom edge to form a second fold hinge and defining a jaw segment between said bottom edge and said second fold hinge line with each said jaw segment being inclined and sloping downwardly and inwardly at an angle with respect to the longitudinal axis of the side member and inclined towards the opposite jaw segment, and hingeable at said second fold hinge line, each said jaw segment being flat and non-curvilinear and with each of said side members adapted to be directly manually engaged and moved towards each other so that the jaw segments may grasp and hold the material or matter to be engaged by said tongs, with said jaw segments yielding or hinging on said second hinge line as said side members are urged towards each other, one of said side members having a tongue struck out of a side thereof to engage the other side member to space the said side members from each other in normal position, and at least one of said side members having cutouts to permit gripping engagement by the fingers of the hand.

3,848,907

LATCH/UNLATCH MECHANISM FOR CASSETTE HOLDER DOOR

John Shiurila, Alameda, Calif., assignor to The Singer Company, New York, N.Y.

Filed Sept. 17, 1973, Ser. No. 398,275

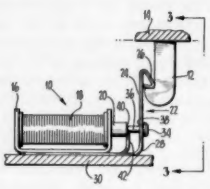
Int. Cl. E05c *19/06*

U.S. Cl. 292—81 **4 Claims**

1. A latch/unlatch mechanism particularly useful for a cassette holder door comprising:

a solenoid including a coil and plunger means responsive to the magnetic field in the coil;

resilient latch means yieldably engageable with a hook on said door and operatively and directly attached to said plunger means and disengageable from said hook by the



bending thereof upon energization of said solenoid and the retraction of said plunger means; and

tab means integral with said resilient latch means and operatively engaged with said plunger means for limiting the overtravel of said plunger means beyond the required stroke upon de-energization of said coil.

3,848,908

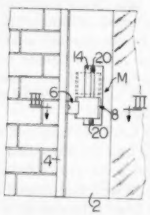
LOCKING DEVICE FOR SLIDING PANELS

Harry M. Rich, Toronto, Ontario, Canada, assignor to Ram Partitions Limited, Ontario, Canada

Filed June 27, 1973, Ser. No. 374,086

Int. Cl. E05c *1/04*

U.S. Cl. 292—189 **13 Claims**



1. Mechanism for releasably interlocking a pair of closure members of which one, at least, is movable between open and closed positions relative to the other;

a stationary interlock element mountable on one of the closure members and a movable interlock element having a hook portion which is disengageably engageable with the hook portion of the other when the movable closure member is in closed position relative to the other closure member to prevent movement thereof towards its open position;

an attachment plate;

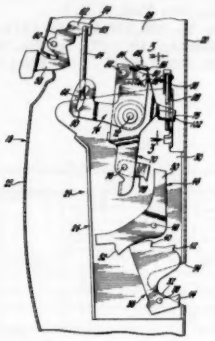
elongated mating formations on said attachment plate and on the movable interlock element permitting said movable interlock element to be retained on said attachment plate while sliding thereon in the direction of the length of said mating formations; said attachment plate being mountable on one of said closure members for mounting said movable interlock element;

each said stationary and movable interlock element and said attachment plate being, respectively, of uniform cross-section throughout its length enabling it to be formed by extrusion.

3,848,909
CLOSURE LATCH ASSEMBLY

Charles W. Foley, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 1, 1973, Ser. No. 365,767
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **3 Claims**



1. In a latch assembly disposed on a rigid support structure and including latch means actuable from a latched condition to an unlatched condition and handle means having a rod element bodily shiftable between an extended position and a retracted position in response to corresponding movement of a handle portion of said handle means, the improvement comprising, a first lever disposed on said support structure for pivotal movement about an axis thereof and engageable on said latch means for actuating the latter to the unlatched condition upon pivotal movement in one direction, a second lever disposed on said support structure for pivotal movement about said axis, said rod element being engageable on said second lever and operative to pivot the latter in said one direction in response to bodily movement of said rod element to the extended position, and one-way clutch means between said first and said second levers operative to establish therebetween a rigid connection only in said one direction of pivotal movement so that pivotal movement of either of said first and said second levers relative to the other in the opposite direction effects adjustment of the angle included therebetween.

3,848,910
DOOR LOCK, ESPECIALLY FOR MOTOR VEHICLE DOORS

Karl Wilfert, Gerlingen-Waldstadt; Gunter Gmeiner, Sindelfingen; Christian Grabner, Maichingen, and Ernst Nockemann, Wuppertal, all of Germany, assignors to Firma Bomoro Bocklenberg & Motte GmbH & Co. KG, Wuppertal and Daimler-Benz Aktiengesellschaft, Stuttgart, both of, Germany

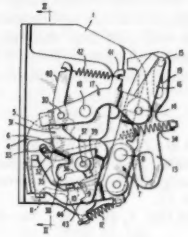
Filed Oct. 20, 1972, Ser. No. 299,276
Claims priority, application Germany, Oct. 22, 1971, 2152613
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **27 Claims**

1. A lock for doors and the like comprising:

a latching means engaging in a closure means at a closed position,

a locking pawl means locking said latching means in the closed position, said locking pawl means being disengageable from the latching means by a disengaging lever means,

safety lever means coordinated to said disengaging lever means for preventing the release of said locking pawl means, and

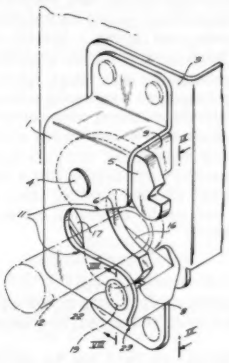


a locking lever means for forcibly guiding said locking pawl means into the locked position and for checking the closed position of said latching means, said locking lever means being actuated by said safty lever means.

3,848,911
MOTOR VEHICLE DOOR LATCH

Hans-Dieter Watermann, Metzkausen, and Frank Kleefeldt, Heiligenhaus, both of Germany, assignors to Arn. Kiekert Sohne, Heiligenhaus, Germany

Filed Mar. 7, 1973, Ser. No. 338,816
Claims priority, application Germany, Mar. 8, 1972, 2211161; Apr. 18, 1972, 2218734
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **11 Claims**



1. A latch for a door engageable with a doorpost, said latch comprising:

a bolt extending from said doorpost and having an axis;

a U-shaped housing on said door having a flat central web formed with a laterally open notch and two flat legs extending from said web toward said door;

a cover plate bridging said legs of said housing;

a pivot pin extending axially between said web and said plate;

a pivotal flat locking pawl on said pin having a pair of arms separated by a bight, said bolt being engageable with one of said arms adjacent said bight to pivot said pawl;

a keeper pivoted between said web and said plate and engageable with at least one of said arms to prevent pivoting of said pawl in one direction to retain said bolt behind said pawl in said notch; and

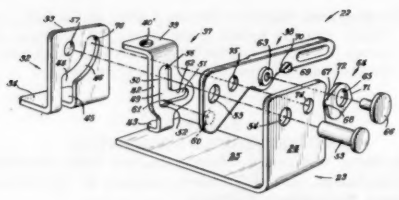
a pair of outwardly resiliently deflectable ramps between said plate and said web and next to said pawl, said ramps converging toward a plane described by the axis of said bolt in the direction of insertion thereof, said bolt being engageable with both of said ramps on entrance along said plane into said notch, said ramps being in continuous engagement with said bolt throughout the movement thereof in said housing and said pawl being dimensioned to prevent engagement of said bight with said bolt.

3,848,912

LATCH FOR HATCH COVERS FOR HOPPER CARS

Finn Jensen, Dolton, and Rudolph E. Nadherny, Naperville, both of Ill., assignors to Illinois Railway Equipment Company, Chicago, Ill.

Filed Oct. 2, 1973, Ser. No. 402,830
Int. Cl. E05c *5/00*
U.S. Cl. 292—256.5 **4 Claims**



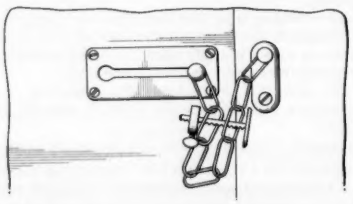
1. A latch for holding the distal edge of a hatch cover in closed position over a trough of a hopper car comprising: an upstanding outer flange secured to said hopper car, an upstanding inner flange secured to said hopper car and spaced from said outer flange toward said hatch cover; a keeper overlying said inner flange, guided for translatory and pivotal movement thereon, and having a laterally extending arm overlying said hatch cover in latched position; and a handle pivoted on said outer and inner flanges between said keeper and said outer flange and cooperating with said keeper for shifting said laterally extending arm between latched and unlatched positions, said keeper having a platelike section juxtaposed to said inner flange, said platelike section having an L-shaped slot, and said handle having a detent extending into said L-shaped slot and movable along the lower arm thereof when said handle is pivoted between latched and unlatched positions.

3,848,913

LOCKING DEVICE FOR DOOR CHAINS

John J. McGann, Jr., P.O. Box 991, New Smyrna Beach, Fla. 32069

Filed May 29, 1973, Ser. No. 365,397
Int. Cl. E05c *19/18*
U.S. Cl. 292—264 **3 Claims**



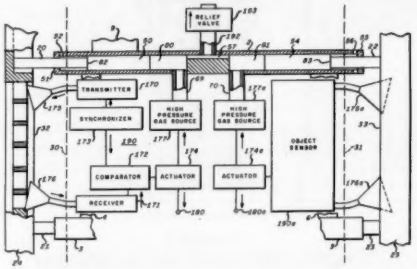
1. A locking device, secured through selected links of a door chain, and consisting of two parts: (1) a screw-like device, consisting of a large head, and a shaft having notches along the length of the shaft, and (2) a cylindrical collar which fits on the shaft, and having a thumb screw which screws into threads tapped into the cylindrical collar, and into the notches on the shaft.

3,848,914

MOTOR SHIFTABLE SHOCK ABSORBING BUMPER

Robert Lucian Wathen, Greenvale, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.

Continuation of Ser. No. 208,328, Dec. 15, 1971, abandoned.
This application Oct. 19, 1973, Ser. No. 389,612
Int. Cl. B60r *19/06;* **B61f** *19/04;* **H01j** *39/12*
U.S. Cl. 293—9 **13 Claims**



1. A radio pre-collision protective system for a vehicle having first and second ends, comprising:

directive radio object detector means at said first end characterized by the generation of a control signal instantaneously prior to collision of an object with said first end of said vehicle,

high pressure fluid generator means instantaneously responsive to said control signal, and

actuator means for supporting bumper means at said first end and responsive to activation of said high pressure fluid generator means for extending said bumper means prior to said collision.

ERRATUM

For Class 293—88 see:
Patent No. 3,848,916

ERRATUM

For Class 294—1 see:
Patent No. 3,848,906

3,848,915

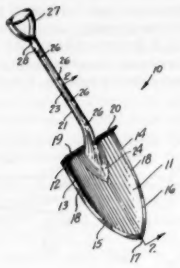
TREE BALLING SPADE

Bernard Wherry, c/o Wherry Nurseries, St. Marys, W. Va. 26170

Filed Jan. 3, 1973, Ser. No. 320,762
Int. Cl. A01b *1/02*
U.S. Cl. 294—49 **1 Claim**

1. In a tree balling spade, a relatively thin concave blade having a transverse back edge and spaced parallel side edges blending into curved forward edges that terminate in a point, a continuous sharpened edge extending along both side edges and forward edges from the rear edge, a pair of foot engaging plates of generally rectangular formation integrally formed on the back edge of said blade and extending generally perpendicularly upwardly from said blade, a first arcuate metallic plate secured to said blade by welding, a second arcuate metallic plate provided with an arrowhead extension that engages

the concave surface of the blade and is secured thereto, a generally cylindrical handle having a portion thereof positioned between said arcuate plates, securing elements extending through said arcuate plates and said handle for securing said handle to said blade, and a stirrup handgrip rigidly se-



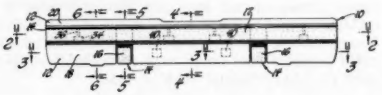
cured to the outer end of said handle, said first and second arcuate metallic plates extending from said handgrip to said blade, the blade of the spade having a length from the back edge to the point on the front approximately one and one half times as great as the distance between the pair of side edges adjacent the back edge.

3,848,916

BUMPER ASSEMBLY

Richard E. Hulten, Durham, N.H., assignor to McCord Corporation, Detroit, Mich.

Filed Jan. 18, 1973, Ser. No. 324,721
Int. Cl. B60r *19/08*
U.S. Cl. 293—88 **6 Claims**



1. An energy absorbing bumper assembly comprising; an elongated plastic shell adapted to extend transversely of a vehicle, said shell member having at least one open aperture therein, plastic bumper means for absorbing impact energy disposed within said aperture and being exposed through said shell member, said shell member being adapted to deflect upon impact thereby to allow said bumper means to absorb the impact energy, a support member, said bumper means being independently secured to said support member, said shell member being secured to said support member, and said shell member including spring means disposed rearwardly thereof.

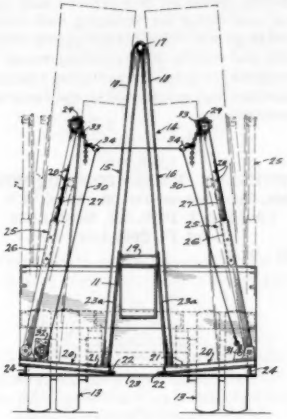
3,848,917

APPARATUS FOR TRANSPORTING FLAT GLASS AND THE LIKE

John L. O'Neal, 24982 Thompson Rd., Perrysburg, Ohio 43551

Filed Apr. 9, 1973, Ser. No. 349,020
Int. Cl. B60p *3/00*
U.S. Cl. 296—3 **9 Claims**

1. A structure for supporting stacks of flat rigid sheet material upon a semi-trailer having a rigid main frame extending lengthwise of the semi-trailer, said structure comprising a generally A-shaped platform having a pair of sloped support walls extending downwardly to terminate below the level of said trailer rigid main frame, said support walls joined at their top edges and at an intermediate position by a rigid internal web which rests upon said main frame to support the entire structure, each of said support walls extending from their upper intersecting edges downwardly and outwardly to terminate at a level below said main frame to provide a central sloped divider, a rigid platform extending outwardly and slightly upwardly from the lower edges of each of said support walls to provide a floor on each side of the divider to support the lower edges of a stack of such rigid sheets at a level below said truck frame, at least two elongate clamping members having a lower end pivotally secured to said rigid platform and



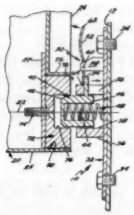
extending upwardly along but spaced from the adjacent support wall, and means for securing the upper ends of said clamping members relative to said support wall to prevent movement of such rigid sheets away from said wall, said securing means including a tension line having one end secured to said platform on one side of said wall and extending through guide means secured to the upper ends of a pair of opposed clamping members and thence downwardly to said opposed platform opposite the secured end thereof, and means for winding said line on said opposed platform to exert an inward and downward force upon said clamping members.

3,848,918

TAILGATE RELEASE

James L. Dyer, Sparta, Mich., assignor to Rewop Company, Grand Rapids, Mich.

Filed Mar. 12, 1973, Ser. No. 340,369
Int. Cl. B62d *25/00*
U.S. Cl. 296—57 R **21 Claims**



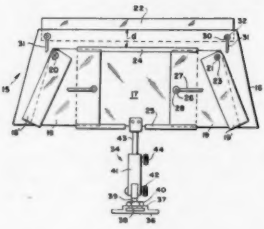
1. Apparatus for removably, pivotally securing a tailgate to a vehicle, including a tailgate pivotable between an open and closed position, and a casing framing at least a portion of said tailgate, said tailgate having an edge including an aperture

adjacent said casing for receiving a hinge pin, said apparatus comprising: a hinge pin positioned adjacent said tailgate aperture; a base plate secured to said casing adjacent an edge of said tailgate including said aperture and between said edge of said tailgate and said casing; said base plate having a housing mounted thereon and projecting from only one side of said base plate, towards said tailgate whereby said base plate can be mounted against said casing without the need for providing accomodations for the housing; said housing including a receptacle slidably receiving said hinge pin release means mounted on said base plate and being operably connected to said hinge pin for axially moving said hinge pin; said release means including means located between said edge of said tailgate and said casing for actuating said release means whereby said hinge pin is withdrawn to permit removal of said tailgate from said vehicle; said actuating means being protected between said tailgate edge and casing when said tailgate is in its closed position and accessible when said tailgate is in its open position.

3,848,919
OPHTHALMIC SCREEN FOR MOTORISTS

Robert Smith, 555 Elmwood Ter., Rochester, N.Y. 14620

Filed May 8, 1969, Ser. No. 823,025
Int. Cl. B60j *3/04*
U.S. Cl. 296—97 F **7 Claims**



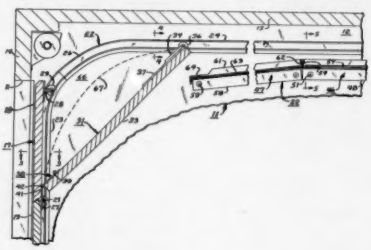
1. An opthalmic screen device of the character described, at the lower part of the windshield of a motor vehicle, directly in front of the driver, comprising a light-filtering panel member of relatively low density, a light-shielding member of comparatively high density covering only the major central part of said panel inward of its top and side edges and starting substantially from the bottom edge of said panel, whereby said panel is unobstructed in a predetermined top zone extending from side to side and in predetermined zones along its sides, extending from top to bottom thereof; the upper edges of said members being horizontal, said light shielding member comprising a central area and two horizontally slidably mounted panels overlapping said central area, one at each side thereof, and means extending from the screen for mounting onto the vehicle.

3,848,920
CARGO DEFLECTOR PANEL

James T. Linhart, 203 W. Hickey, Lombard, Ill. 60148; Flay D. Crosswell, 309 Lafayette, and Gerald W. Galbreath, 787 Irvin Shoots Rd., both of Marion, Ohio 43302

Filed Oct. 3, 1972, Ser. No. 294,687
Int. Cl. B62d *25/06*
U.S. Cl. 296—106 **29 Claims**

1. In a truck trailer having a pair of substantially vertical side walls and top and bottom walls connected between said side walls, the rear of said trailer defining an access opening into the interior thereof, a pair of substantially L-shaped guide tracks mounted on the walls of said trailer, said guide tracks including substantially vertical track portions disposed adjacent the opposite sides of said access opening and substantially horizontal track portions extending inwardly into the interior of said trailer adjacent the upper edge of said access opening, said vertical and horizontal track portions being interconnected by arcuate track portions, and a door unit slidably supported on said guide tracks and movable between a closed vertical position wherein said door unit is disposed within said vertical track portions for closing said access opening and an open substantially horizontal position wherein said door unit is supported on said horizontal track portions for uncovering said access opening, said door unit including a plurality of door panels horizontally hinged together to permit relative pivotal movement therebetween as the door moves between its open and closed positions, the improvement comprising:

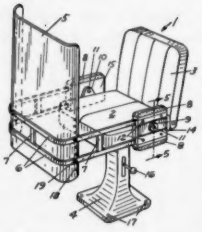


deflector means associated with said door unit for preventing the cargo contained within said trailer from interfering with the upper edge of said door unit as same is being moved from its closed to its open position, said deflector means including a deflector panel extending laterally across the width of said door, said deflector panel being disposed at an angle relative to said door unit when same is in said closed position, one edge of said deflector panel being disposed adjacent the door unit and means pivotally connecting said one edge of said deflector panel to the upper portion of said door unit, the other edge of said deflector panel being disposed adjacent said horizontal track portions, and means associated with said deflector panel adjacent said other edge for slidably supporting same on said horizontal track portions.

3,848,921
BOAT SEAT

Raymond Dewey Rhodes, 1609 Donald Dr., Bossier City, La. 71010

Filed Apr. 2, 1973, Ser. No. 347,060
Int. Cl. A47c *7/66*; **B63b** *29/00*
U.S. Cl. 297—184 **8 Claims**



1. A seat for watercraft comprising:

a. A support mounted to the floor of said watercraft;

b. At least one shield mount, one end of which is in essentially horizontally adjustable cooperation with said support; and

c. An essentially transparent shield means adjustably carried by the opposite end of said at least one shield mount, and adapted to protect the occupant in said seat from wind and inclement weather; and

d. An arm rest assembly mounted on said support comprising a locking plate adapted to engage said at least one shield mount; a shield mount plate adapted to engage said at least one shield mount in cooperation with said locking plate; a threaded adjusting bolt carried by said support, said locking plate and said shield mount plate; and an adjusting knob adapted to receive said adjusting bolt in threaded relationship and exert collective holding pressure on said support, said locking plate, said shield mount plate, and said at least one shield mount when said adjusting knob is tightened on said adjusting bolt.

3,848,922

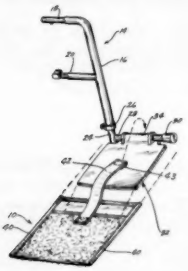
WHEELCHAIR FOOTPLATE COVER CUSHION

Royal D. Blanford, 437 E. 6th St., Ames, Iowa 50010

Filed Nov. 21, 1973, Ser. No. 418,089

Int. Cl. A47c *7/36*

U.S. Cl. 297—219 **9 Claims**



1. A wheelchair comprising,

a frame having wheels,

a pair of footrests on said frame,

each footrest including a substantially vertically disposed support member, and a footplate pivoted to said vertical member for pivotal movement about a horizontal axis between a first position extending horizontally inwardly to a second position extending vertically, and

a cover cushion detachably positioned on said footplate and including an enclosure open at only one end and in communication with a pocket in said enclosure, the free end of said footplate being positioned in said pocket, and a fastening means extending from one side of said enclosure over said pivotal end of said footplate into engagement with the opposite side of said enclosure.

3,848,923

SAFETY LOCKING DEVICE FOR AUTOMOBILE RECLINING SEATS

Bernhard Dehler, Coburg/Bayern, Germany, assignor to Metallwerk Max Brose & Co., Bayern, Germany

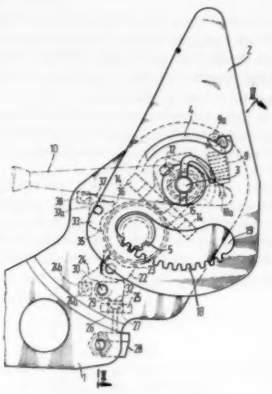
Filed July 30, 1973, Ser. No. 384,021

Claims priority, application Germany, Aug. 7, 1972, 2238899

Int. Cl. A47c *1/25*

U.S. Cl. 297—366 **19 Claims**

1. A safety locking device for reclining seats of a motor vehicle, said seats including a stationary section and a reclining section pivotally connected to said stationary section, said device comprising ratchet means mounted to rotate with said reclining section upon pivotal motion thereof, pawl means pivotally mounted relative to said stationary section in a position to enable engagement of said pawl means with said ratchet means to lock said ratchet means against rotation, means normally biasing said pawl means out of locking engagement with said ratchet means, and actuating means displaceable in response to abrupt motion of said motor vehicle



for urging said pawl means into locking engagement with said ratchet means thereby to prevent pivotal motion of said reclining section.

3,848,924

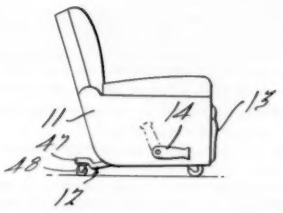
MOBILE CHAIR BASE HAVING LOCKING MEANS

Edwin J. Shoemaker; Edwin G. Gensler, and David B. White, all of Monroe, Mich., assignors to La-Z-Boy Chair Company, Monroe, Ill.

Filed Sept. 20, 1973, Ser. No. 399,081

Int. Cl. A47c *7/50*

U.S. Cl. 297—434 **7 Claims**



1. In a base for a chair, a base frame having side elements with at least one cross bar therebetween, a wheel mounted at the forward end of each side element, a caster mounted at each rear end of said side elements, a spring pressed locking member at the front ends of the side elements which are urged by the springs into engagement with the wheels, a leg rest mounted at the forward end of the chair, link means on the sides of the chair for supporting and moving the leg rest to extended and retracted positions, and means operated when the link means moves said leg rest from retracted position for releasing said locking means.

3,848,925

TRANSIT VEHICLE SEAT

Arthur J. Harder, Jr., Franklin Park, Ill., assignor to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Filed Nov. 2, 1972, Ser. No. 303,243

Int. Cl. A47c *7/02*

U.S. Cl. 297—452 **3 Claims**

1. A transit seat comprising:

a rotary cast, monolithic, hollow, plastic shell without voids

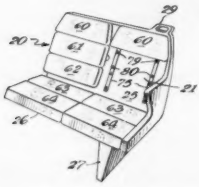
and composed of a thermosetting, plastic material selected from the group consisting of cross linkable linear polyethylene, polycarbonate, polyvinylchloride and nylon;

said shell being rotary cast from powder and having a thickness in the range ⅛ inch — ¼ inch to permit rotary casting into the desired seat shape without creating voids and to permit accommodation in a rotary casting mold using powder as a starting material;

a foamed polyurethane plastic material completely filling the interior of said shell, said interior being without voids; said foamed polyurethane having a density in the range 2.0 to 3.5 lbs. per cubic foot;

said hollow plastic shell having a pebbled inner surface including bumps and indentations resulting from the rotary casting of said shell from powder;

said foamed, polyurethane plastic material intimately surrounding said bumps and filling said indentations at said hollow surface;



the combination of said hollow plastic shell and said foamed polyurethane interior having substantially greater strength, resistance to indentation and rigidity than said hollow plastic shell alone;

a plurality of cushion sections;

means removably mounting a first of said cusion sections in a first predetermined position on said shell;

means mounting a second of said cushion sections in a second predetermined position on said shell;

fastener means for securing said second cushion section against removal from said second predetermined position in the absence of a special tool;

said fastener means being hidden from view by said second cushion section and said shell;

and means on said first-recited mounting means and on the second cushion section cooperating to maintain the first cushion section in said first predetermined position and to prevent its removal therefrom so long as the second cushion section is in the second predetermined position.

3,848,926

OCCUPANT SEAT

Kenitiro Kuroishi, Yokohama, Japan, assignor to NHK Spring Co., Ltd., Yokohama-shi, Japan

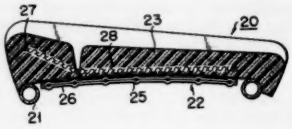
Filed Dec. 26, 1972, Ser. No. 318,661

Claims priority, application Japan, Mar. 3, 1972, 47-26272; Mar. 3, 1972, 47-26274; Mar. 3, 1972, 47-26275

Int. Cl. A47c *7/02*

U.S. Cl. 297—452 **3 Claims**

1. An occupant seat comprising a frame, a spring structure fitted to the frame and a seating section mounted on the spring structure, said spring structure including a plurality of parallel, unconnected spring members consisting of a single wire having a hook at both ends for engagement with said frame, a coil portion adjacent each end and a straight central portion between said coil portions, said seating section comprising a buffer body, the underside of said buffer body including a plurality of parallel grooves so located in said underside that each of said spring members extends into one of said grooves,



such arrangement of said spring members and grooves serving to prevent lateral displacement of the spring members.

3,848,927

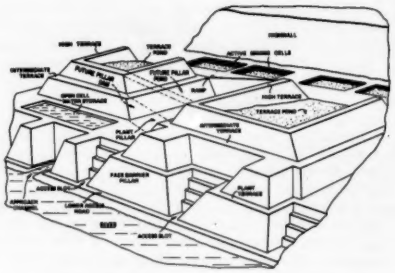
MINING METHOD USING CONTROL BLASTING

Clifton W. Livingston, 624 Panorama Dr., Grand Junction, Colo. 81501

Division of Ser. No. 14,166, Feb. 25, 1970,. This application Aug. 18, 1971, Ser. No. 172,736

Int. Cl. E21c *37/00*

U.S. Cl. 299—13 **30 Claims**



1. A mining method comprising:

a. preparing a bench free face by conducting test blasts;

b. establishing a pattern of cellular units separated by pillars of the ore body to be mined;

c. tunneling horizontally though said ore body perpendicular to said free face in said pillar areas; d. tunneling through said cellular units parallel to said free face and at the same level as said tunneling in step (c);

e. placing charges in the tunnels formed in step (d) in the area of said cellular units; and

f. detonating said charges.

3,848,928

PANTOGRAPHIC WALL PROTECTOR AND AUTOMATIC CONTROLLING DEVICE THEREOF

Shigeo Nakajima, Kushiro, Japan, assignor to Taiheiyo Coal Mining Co., Ltd., Tokyo, Japan

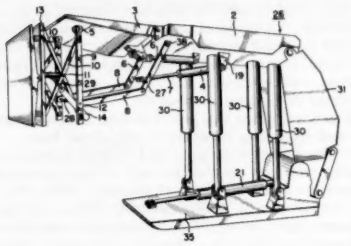
Filed Feb. 12, 1973, Ser. No. 331,791

Int. Cl. E21d *23/00*

U.S. Cl. 299—33 **3 Claims**

1. In a mining operation wherein a moveable drum shearer (**34**) moves against a wall to shear material therefrom, a pantograph wall protector to hold the wall at locations where the drum shearer is not operating comprising in combination:

a. a horizontal shoe (35) with inner and outer ends, the inner end being towards said moveable drum shearer (34);
b. an arch frame (31) extending vertically upwards from said shoe outer end and vertically extending prop means (30) connected to said shoe (35);
c. a center beam (2) with inner and outer ends, said outer end being horizontally supported by said arch frame (31) and said prop means (39) above said shoe and a tipping beam (3) pivotally connected to said center beam and said tipping beam serving to support the ceiling of an excavation;
d. brackets (5) disposed towards said tipping beam inner end, and link bars extending downwards, a horizontally



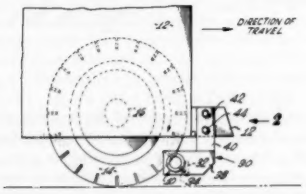
telescoping zig-zag pantograph extending from said link bars including a vertical wall protection plate (13) disposed at the outer end of said pantograph, with hydraulic cylinder means connected to said center beam and link bars to extend and contract said pantograph;
e. support means (16) on said shoe inner end a switch member and an enabling member (15) one of said members being mounted on said support member (16), the other of said member being mounted for motion with said movable drum shearer (34) whereby as the drum shearer (34) advances or retreats, the switch is enabled by said switch enabling means (15) which switch in turn is coupled to and operates said hydraulic cylinder means to expand or contract the pantograph protector so as to allow passage of said drum shearer.

3,848,929

WATER APPLICATOR FOR A PAVEMENT GROOVING MACHINE

Harold C. Miller, Chicago, Ill., assignor to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Filed June 14, 1973, Ser. No. 369,938
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 **16 Claims**



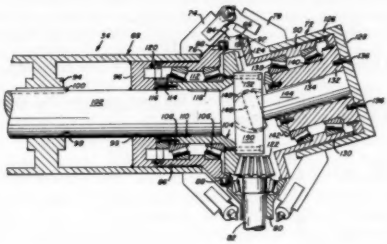
1. A water applicator for attachment to a pavement grooving machine of the type including a cutter assembly which has a rotating shaft on which are mounted a plurality of parallel rotary cutting blades at a predetermined spacing, the blades engaging the pavement to cut grooves therein, the water applicator including:
a water tube having,
a tubular wall having,
at least one enclosed internal passage extending in a direction axially of said tubular wall,
a plurality of notch-like openings extending through said tubular wall into communication with said passage, said openings spaced along said tubular wall at a corresponding spacing to the predetermined spacing of the cutting blades, each said opening being of sufficient width to loosely receive an associated one of the cutting blades;
and supporting means adapted for connection to the pavement grooving machine for supporting said water tube in spaced parallel relation to the rotating shaft with the cutting blades projecting through the associated said openings in said tubular wall partially into said passage.

3,848,930

CONTINUOUS MINING MACHINE WITH DRIVE TO ANGLED END SECTIONS

Maurice K. LeBegue, Ashland, Ky., assignor to National Mine Service Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 210,916, Dec. 22, 1971, Pat. No. 3,774,969. This application Oct. 17, 1973, Ser. No. 407,171
Int. Cl. E21c *27/24*
U.S. Cl. 299—76 **9 Claims**



1. A continuous mining machine comprising,
an elongated body portion mounted on propelling means,
a boom member pivotally secured to said body portion and extending forwardly therefrom,
a drum member rotatably mounted on the front of said boom member transversely to said body portion, said drum member having cutting elements extending therefrom,
said drum member having an intermediate section and a pair of end sections, said end sections extending angularly to said intermediate section so that certain of said cutting elements mounted on said drum member overlap along the front of said drum member to provide a continuous cutting pattern along the length of said drum member,
said pair of said drum member end sections having rear portions spaced from said drum member intermediate section and forming a pair of openings between said end sections and said intermediate section,
input drive shafts for rotating said drum member, said input drive shafts extending through said respective openings,
bevel gear drive means positioned within said drum member and nonrotatably secured to said intermediate section,
pinion gears secured to said input drive shafts and meshing with said respective bevel gear drive means, and

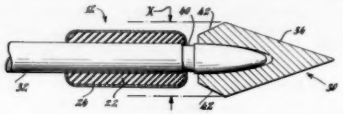
means drivingly connecting each of said bevel gear drive means to said adjacent end sections so that said input shafts rotate said drum member intermediate section and said end sections.

3,848,931

TOOL BIT FOR VIBRATION ATTENUATION

James A. Swisher, Easton, Conn., assignor to International Tool Sales, Inc., Bridgeport, Conn.

Filed Oct. 10, 1972, Ser. No. 295,928
Int. Cl. B25d *17/12*
U.S. Cl. 299—94 **10 Claims**



1. A percussion tool bit for attenuating operational vibrations, comprising:

a shank through which forces are translated, said shank having a groove disposed therein;

a compressible sleeve disposed about a portion of said shank and in intimate contact therewith;

a rigid sleeve disposed to compressibly encase said compressible sleeve, said rigid sleeve being configured for engagement into said groove on said shank to interlock therewith; and

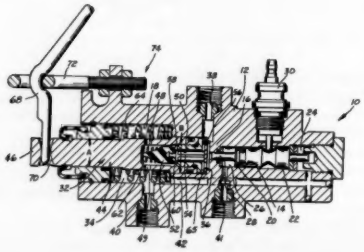
a work tip detachably affixed to one end of said shank.

3,848,932

VEHICLE BRAKING SYSTEMS HAVING HEIGHT SENSING PROPORTIONING VALVE

Richard L. Lewis, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed July 2, 1973, Ser. No. 375,421
Int. Cl. B60t *11/34, 17/22*
U.S. Cl. 303—6 C **8 Claims**



1. In a brake control valve:

a housing defining a bore therewithin;

means dividing said bore into first and second compartments;

one of said compartments having a first inlet port communicated to a first pressure source, an outlet port, and valve means for controlling fluid communication between said first inlet port and said outlet port, said valve means being responsive to a first fluid pressure level at said outlet port to restrict fluid communication between said first inlet port and said outlet port to establish a lower fluid pressure level at said outlet port than at said first inlet port; and

pressure differential responsive means mounted in the other compartment and defining a pair of fluid cavities between opposite ends of each of the pressure differential responsive means and corresponding ends of said other compartment, means communicating one of said cavities with said first inlet port and the other cavity with a second fluid pressure source, the pressure level generated by said second fluid pressure source normally being substantially equal to the pressure level generated by said first pressure source to hold said pressure differential responsive means in a normal position, said pressure differential responsive means shifting in response to the fluid pressure level at said first inlet port upon failure of fluid pressure at said second inlet port to another position, said pressure differential responsive means carrying means disposed out of engagement with said valve means when the pressure differential responsive means is disposed in the normal position, but engaging said valve means to hold the latter open to permit substantially unrestricted fluid communication between said first inlet port and said outlet port when said pressure differential responsive means is shifted to the another position;

said means dividing said bore into said compartments being a wall extending transversely across said bore;

said valve means including a pair of valve members cooperating with one another to control fluid communication between said first inlet port and said outlet port;

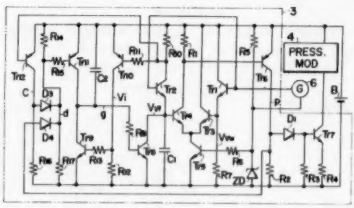
said means carried by said pressure differential responsive means being independent of said valve members disengaged from the latter when the differential pressure responsive means is disposed in said normal position, but moving into engagement with one of said valve members to hold the latter away from the other valve member when said differential pressure responsive means shifts to said another position.

3,848,933

SKID CONTROL SYSTEM FOR VEHICLES

Takeshi Ochiai, Aichi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Continuation-in-part of Ser. Nos. 109,461, Jan. 25, 1971, abandoned, and Ser. No. 109,465, Jan. 25, 1971, abandoned. This application July 11, 1972, Ser. No. 270,584
Claims priority, application Japan, Jan. 26, 1970, 45-6312; Aug. 5, 1970, 45-67971; Jan. 27, 1970, 45-6743
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 BE **43 Claims**



1. A control device for regulating the braking effect of a brake system of a vehicle with wheels on the basis of the wheel velocity and a set deceleration comprising, regulator means for establishing an indication corresponding to the set deceleration, circuit means forming a control signal corresponding to the velocity of the wheel to be controlled, network means responsive to an indication corresponding to the set deceleration and coupled to said circuit means for inhibiting changes in the value of the control signal formed by said circuit means at a rate greater than the indication, and electrical means

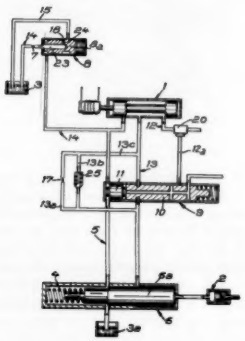
responsive to the control signal for producing a brake modulation output when the change in the value of the signal is inhibited, said regulator means including variation means for varying the set deceleration as a function of the time during which the signal is not inhibited and during which the wheel velocity is simultaneously increasing.

3,848,934

HYDRAULIC UNIT FOR A BRAKING MECHANISM PROVIDED WITH AN ANTI-LOCKING SYSTEM

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Mar. 7, 1973, Ser. No. 339,008
Claims priority, application France, Mar. 9, 1972, 72.8307
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F **10 Claims**



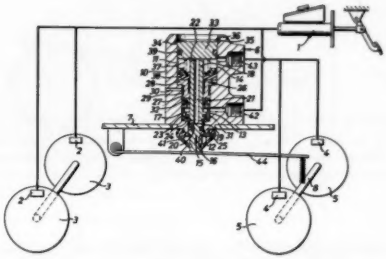
1. Hydraulic unit for a braking mechanism having an anti-locking system for at least one wheel of a vehicle which is intended to ensure the pressure variations of a fluid in the brake operators receiving said fluid connected to said wheel both when locking is imminent and when the wheel regains its grip and which is constituted by a source of fluid under pressure controlled by the driver, by said brake operators, by a first pipe connected to the source of fluid under pressure, by a second pipe connected to the brake operators and by a third exhaust pipe, characterized in that a three-way valve having two stable positions controlled by a device detecting the dynamic state of the wheel is connected to the three said pipes and is able to connect the second pipe selectively to the first pipe and the third exhaust pipe, however, on the one hand, a distributor having two positions which is arranged in the second pipe, closes the latter in its second position as soon as the detection device registers an abnormal state of rotation of the wheel and remains in a cloed position as long as the value of the pressure of the fluid from said controlled source has not appreciably decreased and thereby opens the distributor thus allowing a substantially free passage of fluid in said first position and that, on the other hand, a first conduit is provided having a first flow-limiter in parallel flow relationship to said distributor, and in that said third pipe includes a first accumulator and a second flow-limiter, and in that a second conduit is provided in parallel flow relationship to said second flow limiter, said second pipe comprising a valve member constituted by a moving member of a second accumulator permanently connected to said second pipe between said distributor and the brake operators, said moving member being in its position opening said second conduit when the volume of said accumulator is minimal.

3,848,935

FLUID PRESSURE BRAKING SYSTEMS FOR VEHICLES

Harold Hodkinson, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Apr. 16, 1973, Ser. No. 351,314
Claims priority, application Great Britain, Apr. 19, 1972, 18165/72
Int. Cl. B60t *8/26*
U.S. Cl. 303—22 R **2 Claims**



1. A fluid pressure control valve for controlling fluid pressure acting in a motor cylinder to apply a brake to a vehicle wheel, comprising valve means in a valve body with an inlet adjacent one end for communication with a fluid pressure source, said body having an outlet spaced from said inlet adjacent another end for communication with a motor cylinder of a vehicle wheel, a first plunger disposed in said body extending through an opening in said one end and having an enlarged annular flange on one end thereof in communication with said inlet, the inner end of said valve body adjacent said opening forming a valve seat therein for said annular flange to seat thereon to close off communication between said inlet and outlet, resilient means acting on the portion of the plunger extending out of said valve body opening and normally urging said annular flange out of contact with said valve seat for maintaining said flange unseated and said inlet and outlet in communication with each other, when the brake is not being applied, a second plunger disposed in said valve body comprising an annular flange slidably disposed on said first plunger, said second plunger flange being stepped and having one face in communication with said outlet and another face in communication with said inlet, said one face having a diameter and cross sectional area substantially greater than its other face, whereby said valve means is closed and said one plunger is seated when the loading applied to said one plunger by fluid pressure at the inlet exceeds the loading applied to said one plunger by said resilient means, so that an increase in pressure at said inlet is transmitted to said outlet by said second plunger without the valve means being reopened, the increase in pressure at said outlet being less, when said valve means is closed, than the increase in pressure at said inlet by an amount determined by the ratio between the cross-sectional areas of the sides of said second plunger which are exposed to fluid pressure at the inlet and outlet respectively.

3,848,936

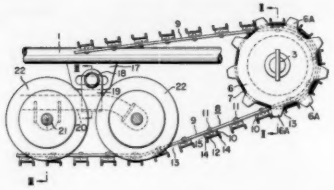
ENDLESS TRACK DEVICE FOR VEHICLES

Toshio Tsuchiya, Ooi-machi, and Osamu Takeuchi, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1973, Ser. No. 336,355
Claims priority, application Japan, Mar. 1, 1972, 47-21223
Int. Cl. B62d *55/24*
U.S. Cl. 305—35 EB **1 Claim**

1. An endless track device for vehicles usable on snow, ice and the like, comprising: a drive wheel supported by the body

of a vehicle in a longitudinal and medial plane thereof and having a plurality of radially extending driving teeth formed around its periphery; at least one guide wheel also supported by the vehicle body in longitudinally aligned relation with said drive wheel; an endless track consisting of a pair of flexible endless belts arranged on opposite sides of said drive wheel and a plurality of flexible connecting bars made of steel sheet extending transversely of said belts for interconnecting them on their exterior surfaces with a definite spacing between any adjacent two of said connecting bars; the latter having U-shaped groove portions formed at the medial portions thereof



for engagement with respective peripheral portions of said drive wheel and said guide wheels, and the remaining opposite side portions being flexible relative to said groove portions; said opposite side portions being engageable with the surface over which the vehicle travels to support a part of its weight; said driving teeth being successively received in spaces between said groove portions for driving engagement with said endless track; said connecting bars having central and side scraper blades respectively formed on edges thereof at said groove portions and said opposite side portions; said central blades projecting more outwards than said side blades.

3,848,937

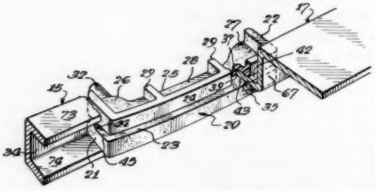
SLIDE MECHANISM

Arthur J. Harder, Jr., Franklin Park, Ill., assignor to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Filed Apr. 26, 1972, Ser. No. 247,681

Int. Cl. F16c *21/00*

U.S. Cl. 308—6 R **11 Claims**



1. A slide mechanism comprising:

a first frame;

a pair of bearing elements each located on said first frame in opposed relation to each other and spaced apart in a direction transverse to the direction of desired sliding movement;

a second frame having a pair of sliding rail elements each having means for slidably engaging a respective one of said pair of bearing elements to mount said second frame for sliding movement relative to said first frame;

at least one of said bearing elements having sufficient resiliency to permit flexing between a normal condition in which said one bearing element is relatively bowed toward said other bearing element and a condition in which the one bearing element is relatively less bowed;

and means mounting said one bearing element on said first frame in said relatively less bowed condition;

said one bearing element including means normally urging said one bearing element to return to its normal condition, whereby said second frame is held between said bearing elements in a manner which prevents movement of the second frame in a direction transverse to the direction of sliding movement.

3,848,938

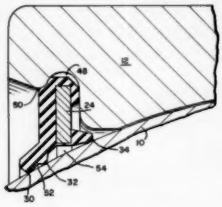
BEARING AND BEARING SEAL

Leo Stella, Bristol, Conn., and Alfred J. Sarbello, Agawam, Mass., assignors to The Torrington Company, Torrington, Conn.

Filed Feb. 28, 1973, Ser. No. 336,542

Int. Cl. F16c *33/72*

U.S. Cl. 308—36.1 **2 Claims**



1. In a sealed, self-aligning bearing, a ball having an outer surface which is a portion of a sphere, a socket having a inner surface cooperating with the spherical outer surface portion of the ball, the socket having at each end an annular groove directed toward the ball forming a seal-receiving recess, and an elastically deformable integral snap-sealing ring filling the space between each seal-receiving recess and the ball, and adapted to enter and lock itself in said space by elastic deflection, each sealing ring having three separate axially-spaced points, each in contact with the spherical outer surface of the ball, thereby providing two spaces between the inside of the sealing ring and the outside of the spherical ball, the outermost point being a surface of a elastically deflected cantilevered axially extending lip.

3,848,939

RADIAL ROLLING BEARING ASSEMBLY

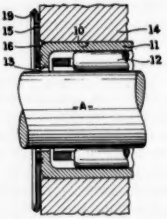
Alfred Pitner, Paris, France, assignor to Nadella, Rueil Malmaison, France, a part interest

Filed Dec. 30, 1971, Ser. No. 214,177

Claims priority, application France, Jan. 29, 1971, 71.03089

Int. Cl. F16c *33/58*

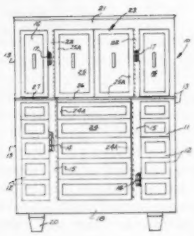
U.S. Cl. 308—236 **13 Claims**



1. A radial rolling bearing assembly comprising in combination a machine element defining a bore and an outer surface surrounding the bore, a cold-formed member of thin sheet metal which is an interference fit in the bore, said member defining a bearing ring having a longitudinal axis, rolling mem-

bers within the ring, the ring having an annular portion defining an outer radial face in a plane perpendicular to said axis and an inner radial face which axially retains the rolling members, means for axially locating the bearing ring in the bore, the locating means comprising an annular element which has an annular surface in axial abutment with the outer radial face of the annular portion and is substantially of the same nature of metal as said member and has a portion which extends radially beyond said bore and is in axially supported relation to said outer surface of the machine element, and fusion welding rigidly interconnecting the annular element and the annular portion.

3,848,940
DUAL PURPOSE CABINET
Darrell E. Berens, 649 Chambers St., Eugene, Oreg. 97402
Filed Apr. 18, 1973, Ser. No. 352,092
Int. Cl. A47f *3/10*
U.S. Cl. 312—135 **2 Claims**



1. A cabinet for the storage of valuable household items permitting display or concealment of the stored items, said cabinet comprising,

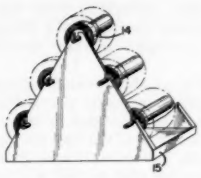
stationary cabinet structure defining a central open area extending substantially the height of the cabinet, said structure having decorative trim disposed upon the cabinet front adjacent said open area,

an upright panel structure of elongate configuration normally closing said open area of the cabinet, said panel having exterior trim similar to the trim on the stationary cabinet structure simulating a cabinet of substantially conventional appearance, horizontal extensions projecting rearwardly from the rearward side of said rotatable panel into the cabinet open area for the upright storage thereon of elongate articles, shaft means mounting said panel for rotational movement about a vertical axis rearwardly offset from the cabinet front, and

said rotatable panel in its normal position having vertically extending edges in opposing relationship to corresponding edges formed on the stationary members of the cabinet, at least some of the panel edges being oblique allowing close disposition of the panel edges to a corresponding stationary edge of the cabinet while permitting arcuate travel therepast during panel rotation whereby lines of demarcation between the panel and stationary cabinet structure are substantially concealed.

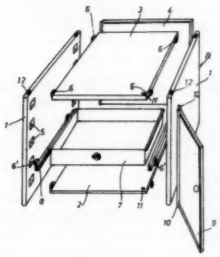
3,848,941
VISUAL-ROTARY-INDEX CARD FILE
Roland Clough Brown, P.O. Box 430, Del Mar, Calif. 92014
Filed Dec. 8, 1972, Ser. No. 322,183
Int. Cl. A47b *63/00;* **A47f** *1/00*
U.S. Cl. 312—189 **7 Claims**

1. A Visual-Rotary-Index card file unit assembled on an axle of circular section at the bearings, but otherwise of other geometric section for the press fit of a hub with slot means completely around its cylindrical surface for holding index means consisting of large size index cards inserted in index card frames, formed with a fork section of two closely-spaced tines, each narrow frame of rectangular plan, the two together forming a sandwich with a stubby flap along the bottom side fitting snugly into the slot of the said slotted hub, one end of said axle fitted with handwheel means for turning said axle,



and brake means to control the rotation of said axle by the operator, stick-um indices suitably spaced around the rim of said handwheel correspond to tabs on said index means, the whole assembly as a unit capable of being lifted off and on its stand means for storage and use by the operator.

3,848,942
MODULE FOR FURNITURE DEVELOPMENT
Luigi Fanini, via Branante, Loreto, Italy
Filed Mar. 22, 1973, Ser. No. 343,860
Int. Cl. A47b *43/00, 87/00;* **A47f** *5/08*
U.S. Cl. 312—257 R **11 Claims**



1. A module fabricated of synthetic material for integration with similar modules to develop articles of furniture and the like comprising a pair of side walls, each of said side walls being comprised of inner and outer components, each of said components having a main planar portion with inward and outward surfaces, said components having a plurality of flange-like projections on their inner confronting surfaces in mutual abutting relation, means fixedly uniting such abutting projections integrating said components into said unitary side walls, said side walls being hollow in the zones between said projections, a top wall, a bottom wall, a rear wall, cooperative means provided on said top and bottom walls and said side walls for detachably engaging said top and bottom walls to said side walls, and means securing said rear wall to said side walls.

3,848,943
ROTATABLE SILVERWARE HOLDER
Noah Gene Geesaman, and Vivian B. Geesaman, both of R.R. No. 1, Bryant, Ind. 47326
Filed Sept. 14, 1973, Ser. No. 397,598
Int. Cl. A47b *81/00*
U.S. Cl. 312—284 **6 Claims**

1. A rotatable silverware holder comprising:

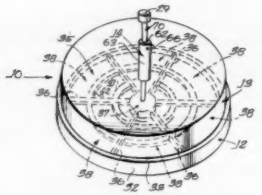
a base member adapted to rest on any suitable support

surface and including an elongated cylindrical boss projecting upwardly a slight distance therefrom and having an elongated vertically extending rod projecting axially upwardly from the top surface of the boss;

a circular tray rotatably supported on the boss projecting from the base for rotation about its axis, the tray including a centrally disposed axially inwardly projecting hub member and a cylindrical outer side wall surface, the elongated rod projecting axially through the hub member through a suitable aperture provided axially therethrough;

a plurality of angularly spaced elongated rectangular partitions radially extending between the hub member and the tray side walls to define therebetween a plurality of separate compartments in the tray, the ends of the partitions engaging the hub member and the interior of the side walls with a side edge of each of the partitions disposed adjacent the tray bottom surface;

a pair of different diameter concentric ring like spacer members connected to the interior tray bottom surface, the partitions dividing the spacer members into arcuate sections with an arcuate section of each spacer member



being disposed in each of the compartments, each spacer member having a plurality of radially extending slots provided therein with each slot being of a size and shape adapted to receive a particular item of silverware therein in a manner to support and store the same in a side-by-side relationship;

a hollow cylindrical cover open at one end and closed at the opposite end and being of a diameter to completely cover the compartments in the tray, the closed end having a centrally disposed aperture permitting the rod to extend axially therethrough;

an elongated hollow tubular member having one end connected to the center of the exterior top surface of the closed end of the cover with the opposite end projecting axially upwardly therefrom, the handle being concentric with the rod which extends axially therethrough; and

means for retaining the cover in an open position spaced axially upwardly a distance from the tray to permit silverware to be inserted into the tray and also to permit silverware to be removed from the tray, such means being readily released to permit the cover to close the tray to protect the same from dirt and other contamination.

3,848,944

CARRYING CASE FOR PA SYSTEM WITH STOWED LECTERN

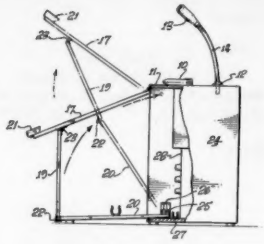
Thomas P. Gilmer, Jr., Albuquerque, N. Mex., assignor to Lectrosonics, Inc., Alburquerque, N. Mex.

Filed Nov. 16, 1973, Ser. No. 416,424
Int. Cl. A47b *77/10, 88/00*
U.S. Cl. 312—314 **10 Claims**

1. In a case having a front panel, two side panels, a top panel and a bottom panel, the combination of

a rear panel connected along its top edge to said case by means for permitting it to be swung up and out through an angle greater than 90° and back to a desired slanted position of less than 90° from the starting vertical position.

first and second members for supporting said panel in said slanted position, said first member extending down from said panel to one end of said second member resting on a supporting surface, one end of said first member being hinged to said panel near the free end thereof and the other end of said first member being hinged to said sec-



ond member at said one end thereof, the other end of said second member extending into said case, and

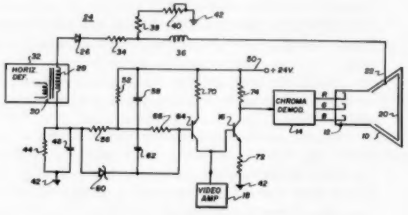
means for pivotally attaching said other end of said second member inside said case near said bottom panel, whereby the hinge between said support members may be swung up through an arc while said rear panel swings first upwardly from said slanted position and then downwardly to a vertical position to close said case with said support members securely stowed within said case.

3,848,945

BRIGHTNESS LIMITING CIRCUIT

Robert A. Holzrichter, Chicago, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Mar. 16, 1973, Ser. No. 342,314
Int. Cl. H01j *29/70*
U.S. Cl. 315—30 **13 Claims**



1. In a television receiver including a cathode ray tube having cathode means and anode means, and a high voltage anode power supply connected to said anode means to provide anode current which is related to cathode current, a limiting circuit responsive to both instantaneous peak current and average current in the cathode ray tube, comprising:

means actuable for limiting the current to the cathode ray tube,

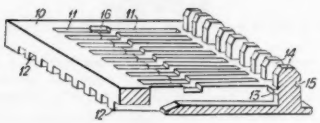
peak current monitoring means responsive to a sensed instantaneous peak cathode ray tube current for actuating said limiting means, and

average current monitoring means responsive to a sensed average cathode ray tube current for actuating said limiting means.

3,848,946
ELECTRIC CONNECTORS

David Walker Halley, Dundee, and Russell Allan Leather, Perth, both of Scotland, assignors to Ferranti Limited, Hollinwood, Lancashire, England

Filed May 19, 1971, Ser. No. 144,871
Claims priority, application Great Britain, May 30, 1970, 26197/70
Int. Cl. H01r 13/54; H05k 1/12
U.S. Cl. 339—17 F 6 Claims

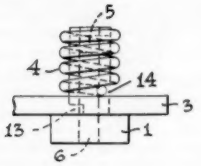


1. An electric connector for connection with the conductors of a flat multiple-conductor cable comprising a first body member of electrically insulating material having means for attaching the cable thereto, a second body member of electrically insulating material securable to the first body member so as to sandwich part of the cable between the two body members, at least one conductive connection member carried by one of the body members, and at least one conductive contact member in the form of a lever having two arms, one arm including a resilient elongated portion and being attached at its end to the other body member, the other arm being engageable at its end with a connection member, the contact member being so shaped that when the two body members are secured to one another with the cable attached to the first body member a portion of the contact member intermediate the two arms thereof bears upon a conductor of the cable from which the insulation has been removed, thereby connecting said conductor to said connection member.

3,848,947
ELECTRICAL CIRCUIT BOARD TERMINAL SPRINGCLIP

Dorothy E. Jambor, Milwaukee, Wis., assignor to Dot Co Incorporated, Glendale, Wis.

Filed June 16, 1972, Ser. No. 251,933
Int. Cl. H05k 1/04
U.S. Cl. 339—17 R 6 Claims

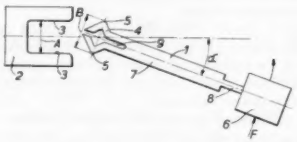


1. An electrical terminal comprising:
a. a conductive rivet including a shaft and a head;
b. a slot in said shaft proximate the head;
c. a bore extending through the end of the shaft opposite the head and having an axis perpendicular to the axis of said shaft;
d. a coil spring disposed about said shaft and having the end thereof nearest the head attached in said slot.

3,848,948
ZERO INSERTION LEVERED INTERFERENCE CONNECTION

Lucas Soes, Vught, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 11, 1973, Ser. No. 405,730
Claims priority, application Netherlands, Oct. 18, 1972, 7214078
Int. Cl. H01r 21/28
U.S. Cl. 339—64 R 4 Claims

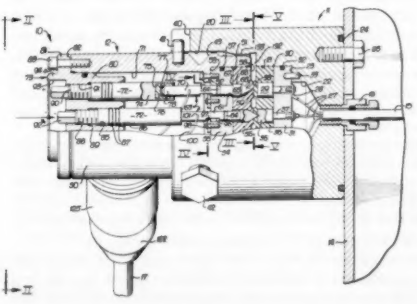


1. An electrical connector comprising male and female contacts engageable by elastic deformation of the male contact, the female contact having a central axis and having a pair of spaced contact surfaces extending parallel to said axis for receiving the male contact between them; the male contact comprising an elongate body formed with an enlargement at its free end projecting from opposite sides of the body, distal parts of the enlargement on opposite sides of the body defining male contact surfaces spaced apart by a distance greater than the spacing between the female contact surfaces, parts of the enlargement proximal to the contact surfaces falling within a circular envelope of diameter equal to the spacing between and passing through the male contact surfaces, a slot extending into the enlargement longitudinally between the male contact surfaces from an end of the enlargement remote from the body, the arrangement being such that the body can be oriented at a first inclination relative to said axis the female contact for insertion of the enlargement into the female contact with minimum interference between the enlargement and the female contact surfaces, and thereafter can be reoriented by rotation relative to the female contact to a second inclination relative to said axis to present maximum interference and elastically to deform the male contact surfaces towards each other as the male contact surfaces with respective female contact surfaces engage.

3,848,949
SUBSEA BUTTON-TYPE ELECTRICAL CONNECTOR

Chester B. Falkner, Whittier, Calif., assignor to Deep Oil Technology Inc., Long Beach, Calif.

Filed Nov. 24, 1972, Ser. No. 309,416
Int. Cl. H01r 13/54, 9/06
U.S. Cl. 339—75 M 6 Claims



1. In a multi-contact button-type electrical connector for use in a hostile environment, the combination of:

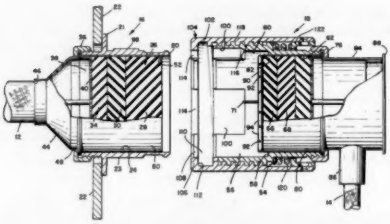
a receptacle means provided with a chamber having an open end;
a carrier member within said chamber provided with a plurality of contact elements having a resilient protective cover thereover;
a plug means receivable within said open end and chamber of said receptacle means;
a carrier body carried by said plug means in alignment with said carrier member on said receptacle means,
said carrier body including a plurality of through bores,
a contact member slidable in each through bore and having a pointed contact head aligned with a contact element in said receptacle means,
a protective cover embedding said pointed head and adapted to contact the cover on said contact element;
and means for individually and separately advancing each contact member into a selected electrical contact with its respective contact element;
said last mentioned means including a follower member having an inner end in force applying relation to an end of a contact member,
said follower member having an outer end having means for receiving forces to move said follower member and said contact member axially into electrical contact with said contact element.

3,848,950

ELECTRICAL CONNECTOR

Larry L. McCormick, and Ben F. Selk, both of Los Angeles, Calif., assignors to G & H Technology, Inc., Santa Monica, Calif.

Filed Sept. 7, 1972, Ser. No. 287,184
Int. Cl. H01r *13/54*
U.S. Cl. 339—90 R **21 Claims**



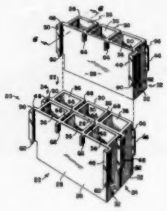
8. An electrical connector including the combination of a plug section,
a first set of electrical contacts on said plug section,
a receptacle section adapted to mate with said plug section,
a second set of electrical contacts on said receptacle section, one of said sets being movable between a first position wherein said contacts are electrically mated and a second position wherein they are electrically unmated,
a breech lock on said sections including a plurality of circumferentially spaced detent means on one of said sections and a movable member on the other of said sections,
said movable member being rotatable between a first angular position wherein it engages the detent means and a second angular position wherein it does not engage said detent means,
resilient spring means effective to bias said movable member toward said first angular position, and
means operatively coupled to said breech lock and to said movable set of contacts for moving said set into the first mated position when said movable member is in said first angular position and into the second unmated position when said movable member is in said second angular position.

3,848,951

CONNECTOR HOUSINGS AND LOCKING STRUCTURES THEREFOR

Leonard H. Michaels, Warrenville, and Edward L. Romine, Darien, both of Ill., assignors to Molex Incorporated, Downers Grove, Ill.

Filed Jan. 12, 1973, Ser. No. 322,913
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **12 Claims**



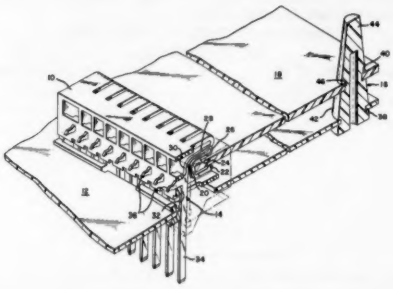
1. A locking structure for holding a pair of connector housing parts in assembled relation, said locking structure comprising a pair of interfacing rigid channel members each defining a slot and a pair of complementary rib members slidably receivable in said slots, a pair of resilient lock means for releasably retaining said rib members, in said channel members, each said lock means comprising a lock member normally obstructing the entrance end of one said slot, an integral resilient hinge interconnecting each said lock member and one said channel member for permitting said lock member to be moved relative to said rigid channel member in response to engagement by the corresponding rib member to a position wherein said rib member may enter said slot.

3,848,952

ZERO INSERTION FORCE EDGE CARD CONNECTOR

Charles I. Tighe, Jr., Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 27, 1973, Ser. No. 383,365
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **13 Claims**



1. An electrical connector for receiving and contacting a mating electrical connector upon application of substantially no insertion force, comprising:
a housing having a fulcrum portion and a stop portion in parallel spaced relation defining an access opening therebetween; and
a plurality of connector spring contacts fixedly mounted in said housing, each said contact including a yoke portion having two interconnected parallel arms with an electrical contact on one of said arms and a follower contact on the other of said arms, a horizontal cantilever spring and

a vertical cantilever spring connected in series, a contact support portion connected to one end of said spring series and said yoke connected to the other end of said spring series, and a terminal portion connected to said contact support, said support portion being fixedly mounted in said housing with said terminal portion extending from said housing and said yoke aligned with said access opening, whereby said mating connector is inserted into said access opening without engaging said spring contacts and is rotated about said fulcrum portion to abut said stop portion and engage said spring contacts.

3,848,953

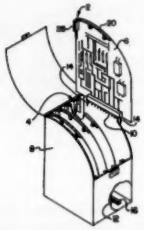
DEVICE FOR INSERTING AND CLAMPING A PRINTED CIRCUIT BOARD

George J. Petroshanoff, Torrance, Calif., assignor to Tridair Industries, Torrance, Calif.

Continuation of Ser. No. 334,800, Feb. 22, 1973, abandoned. This application Mar. 14, 1974, Ser. No. 451,331

Int. Cl. H01r *13/54*

U.S. Cl. 339—92 M **1 Claim**



1. A device for inserting and clamping a printed circuit board of the type having male pin-type contacts for connection with female interconnects within a chassis wherein the board is received in close array with adjacent boards comprising a circuit board component and a chassis component, said circuit board component consisting of a strut and an integral alignment housing, said strut fastened through depending strut tabs to the end of said circuit board opposite the male contact pins, said strut having a width slightly wider than the thickness of said circuit board, said strut extending over and conforming to a substantial portion of the upper contour of said board, said alignment housing suitably arranged to extend downwardly contiguous to one face of the circuit board and adjacent one end thereof when said strut is attached to said circuit board, a jack screw rotatably received but axially restrained within a central bore of said housing, said jack screw extending below said housing and having a reduced tip to facilitate engagement with a nut member, said jack screw having an enlarged head disposed within a central enlarged bore of said housing, said jack screw adapted to be driven by a tool, said housing having a generally rectangular configuration slightly larger in cross-section than the diameter of said jack screw with a locking projection extending along its length along one face thereof, said chassis component consisting of a substantially U-shaped channel-like guide and an attached guide nut, said guide secured adjacent an open end of said circuit board chassis with the longitudinal axis of said guide extending toward said female interconnects on said chassis, one depending leg of said guide extending further outwardly and then inwardly to form a wraparound portion, said guide adapted to slidably receive with limited clearance said alignment housing in a manner such that the locking projection of said alignment housing is carried within said wraparound portion, said guide arranged with respect to female interconnects on such chassis such that when said alignment housing is within said guide said male contacts on said circuit board are aligned with said female interconnects on said chassis, said locking projection of said alignment housing carried within said wraparound portion of said guide to confine said alignment housing and attached circuit board from tilting relative to the longitudinal axis of said guide, a guide nut attached to said guide for threaded engagement with said jack screw after said alignment housing is received within said guide and the male contacts of said circuit board are aligned with said female interconnects, said male contacts being inserted into electrical engagement with said female interconnects by rotation of said jack screw, and said strut acting to distribute the inserting load over said circuit board as said circuit board is inserted into said chassis.

3,848,954

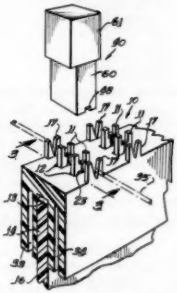
CLIP TERMINAL AND APPLICATOR TOOL COMBINATION

William S. Sedlacek, Chicago, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed June 6, 1973, Ser. No. 367,410

Int. Cl. H01r *9/08*

U.S. Cl. 339—97 R **13 Claims**



1. The combination of a clip terminal of the type having a flat body portion providing two resilient arms separated by a notch at the upper end thereof and by a slot having substantially parallel edges and communicating with the lower end of said notch, the bottom portion of said notch having formed therein sharp corner edges oriented substantially parallel to the axis of an insulated wire to be inserted into the slot, so that movement of the insulated wire into the slot will cause said sharp corner edges to cut through the insulation and bare the surface of the conductor to make electrical contact between the clip terminal and the conductor within the insulated wire, and applicator tool means having first pusher means extending from one end thereof and engaging the insulated wire for pushing the wire into said slot, said applicator tool means further including cutter means spaced from said pusher means to cut the insulated wire at a predetermined distance beyond said clip terminal after said insulated wire is inserted into said clip terminal, said cutting means being movable relative to said pusher means and movable in the same direction as said pusher means to cut the insulated wire after the pusher means has completely inserted the wire into said slot.

3,848,955

ELECTRICAL CONNECTOR FOR TAPPING A CONCENTRIC ELECTRICAL CABLE

Arthur M. Lockie, Sharon, Pa., and Jeffrey A. Hatch, Jefferson City, Mo., assignors to Westinghouse Electric Company, Pittsburgh, Pa.

Filed Aug. 9, 1973, Ser. No. 387,071

Int. Cl. H01r *11/20*

U.S. Cl. 339—97 R **8 Claims**

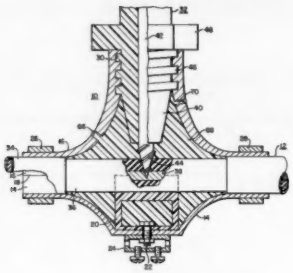
1. An electrical connector for tapping a concentric electrical cable, comprising:

a housing disposable around the cable to be tapped;

a plug inserted through an opening in said housing, said plug having threads thereon which are engageable with threads on said housing;

terminal means located on said plug and adapted for electrical connection of a tapping cable; and

piercing means for penetrating the insulation around the inner conductor of the cable to be tapped, said piercing means being located on said plug and being electrically connected to said terminal means, with the threads on



said plug and housing advancing the piercing means toward the inner conductor when the plug is rotated, thereby forcing the piercing means through the cable insulation and into the inner conductor to establish electrical contact, said piercing means comprising an electrical conducting stud having a substantially pointed end, said stud including threads thereon which have the same pitch as the threads which engage the plug and the housing.

3,848,956

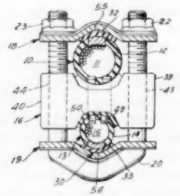
SELF-SEALING UNDERGROUND TAP CONNECTOR

Russell H. Kraft, Hopewell Junction, N.Y., assignor to Fargo Mfg. Company, Inc., Poughkeepsie, N.Y.

Continuation-in-part of Ser. No. 232,742, March 8, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,235

Int. Cl. H01r *11/20*

U.S. Cl. 339—98 **10 Claims**



1. A connector for joining a tap conductor to a run conductor in which said tap includes a spacer bar formed of a non-conducting material, first and second surfaces of said spacer bar, a slot formed in said spacer bar extending from said first to said second surface, a conductor bar disposed within said slot, first and second groups of piercing teeth formed on and extending from said conductor bar protruding from said slot at said first and second respective surfaces of said spacer bar, a first idler member of said tap, first non-electrical conducting idler teeth of said first idler member disposed in spaced relation with said first group of piercing teeth for receiving said cable therebetween, a second idler member of said tap, second non-electrical conducting idler teeth of said second idler member disposed in spaced relation with said second group of piercing teeth for receiving said conductor therebetween pressure means for pressing said first group of piercing teeth and said first idler teeth and said second group of piercing teeth and said second idler teeth toward each other whereby said first and second groups of piercing teeth respectively pierce through the insulation of said run conductor and said tap conductor to produce a firm mechanical and electrical connection between said conductor bar and said run conductor and said tap conductor, and said first and second idler teeth respectively pierce through the insulation of said conductor and said line to produce a firm mechanical connection, and first, second, third and fourth insulation means respectively surrounding said first and second groups of piercing teeth and said first and second idler teeth.

3,848,957

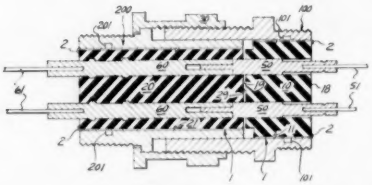
ELECTRICAL CONNECTOR INSERT RETAINER

Robert W. Brush, Unadilla, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 28, 1974, Ser. No. 437,259

Int. Cl. H01r *13/50*

U.S. Cl. 339—176 M **4 Claims**



3. In combination with an electrical connector of the type having a housing and an insert disposed in said housing, the improvement comprising an insert retainer for retaining said insert within said housing, said insert retainer comprising:

a sleeve having a central axis and a plurality of axially extending fingers disposed around the periphery of one end of said sleeve, each of said fingers terminating in an end portion that includes a radial projection that extends in the direction of the central axis of said sleeve.

3,848,958

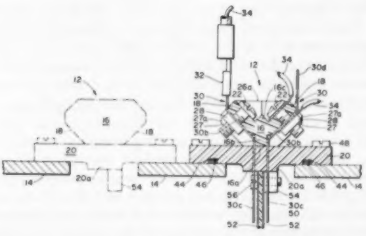
HIGH DENSITY TERMINAL STRIP

Walter Kern, Cohasset, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed Aug. 9, 1973, Ser. No. 387,153

Int. Cl. H01r *9/00*

U.S. Cl. 339—198 R **18 Claims**



1. In an electrical terminal strip having at least two rows of connection sites arrayed on an elongated insulating base member which has a generally planar mounting surface facing in a first direction, each said connection site including an electrical terminal-forming threaded element, the improvement comprising panel means of electrically insulating material on said base, said panel means carrying said rows of said connection sites and having a first surface at which said sites are

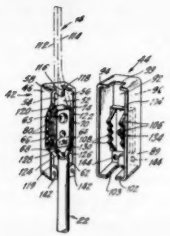
accessible for electrical connection and for adjustment of said threaded element, said first surface facing away from said first direction and being inclined relative to said mounting surface, and said panel means having a second surface facing toward said first direction and being located intermediate said mounting surface and said first surface, and carrying at said second surface a row of further connection sites that are accessible for electrical connection.

3,848,959

CONNECTOR FOR ALARM SYSTEM DOOR CORD

Philip J. Parlato, Kings Park, N.Y., assignor to Alarm Products International, Inc., Long Island City, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,701
Int. Cl. H01r *13/50*
U.S. Cl. 339—200 **18 Claims**



1. A connector joining two sections of an electric lead, comprising:

a housing divided into a female channel section and a male channel closing section;

said housing female channel section including a channel having a width defined between first and second side surfaces that are carried by said female channel section; said channel width approximating the width of one of said electric lead sections, thereby causing the lead sections that are joined in said channel to lie one above the other; said channel having a depth greater than the height of the said two electric lead sections laid over one another; said channel depth being defined by a first channel closing surface that is at the bottom of said channel and is carried by said female channel section;

said male channel closing section carrying a second channel closing surface that projects toward and is opposed to said first channel closing surface and that projects between said channel first and second side surfaces;

forcing means for forcing said first and second channel closing surfaces to move together, thereby to squeeze electric lead sections in said channel together.

3,848,960

JEWELLED STABILIZED OPTIC CELL

Richard H. Burns, Webster; Orest Engelbrecht, Brighton, and Brian H. Welham, Perinton, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

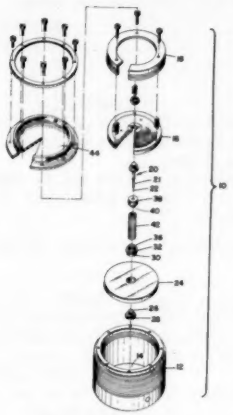
Filed Mar. 30, 1973, Ser. No. 346,498
Int. Cl. G02b *23/16*
U.S. Cl. 350—16 **3 Claims**

1. An assembly for mounting an optical member buoyantly supported within a transparent fluid, the fluid being disposed within a chamber of a stabilizer cell, and the cell having at least one wall, comprising:

a mounting means extending from the stabilizer cell wall to an end terminating in the chamber;

a holder being connected to the optical member and having a pivot means associated therewith, the pivot means being engageable with the end of said mounting means terminating in the chamber;

a pull collar being moveable along and fixable to said mounting means; and



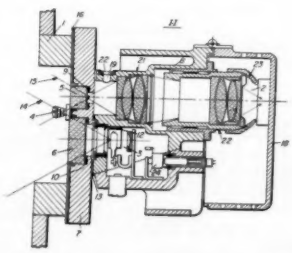
an extendable coil spring under tension connecting the holder to the pull collar for applying a variable force from the pivot means against the end of said mounting means terminating in the chamber.

3,848,961

OBSERVATION DEVICE

Andre Champeau, 7, Rue Puvis de Chavannes 75, Paris, France

Filed Sept. 22, 1972, Ser. No. 291,321
Claims priority, application France, Sept. 28, 1971, 71.34873; Aug. 30, 1972, 72.30726
Int. Cl. G02b *7/00, 23/16*
U.S. Cl. 350—63 **2 Claims**



1. An observation device for high pressure and temperature treatment apparatus comprising

a casing for said apparatus resistant to high pressure and temperature conditions, an opening in said casing,

an optical eye-piece including an objective lens for observation within said casing in a wide field, mounted on said casing adjacent said opening,

an optical element for protection of said eye-piece, of small diameter with respect to said opening, an attachment plate mounting said element and closing said opening, said eye-piece providing observation within said casing through said optical element,

a device for lighting the interior of said casing mounted on said plate,

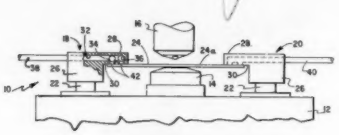
a second optical element protecting said device mounted in said plate between said lighting device and the interior of said casing, and spray nozzle means of anti-adherent material located on said plate adjacent said optical elements for cleaning the surface of said optical elements exposed to the interior of said casing.

3,848,962

SLIDE MOUNTING APPARATUS FOR MICROSCOPY

John Russell Nelson, Natick, Mass., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 18, 1973, Ser. No. 407,537
Int. Cl. G02b *21/00*
U.S. Cl. 350—86 **13 Claims**



1. Slide mounting apparatus for microscopy which comprises:

vacuum chuck means having at least one slide-registration surface to which a vacuum can be applied by evacuation of the chuck means for securing a specimen-bearing slide thereagainst,

a vacuum reservoir having a capacity equivalent to a multiple of the capacity of said chuck means,

vacuum path defining means connecting the reservoir to the chuck means, for transmitting vacuum thereto, and

a vacuum pump connected to said reservoir for periodically evacuating the reservoir,

whereby the chuck means can be evacuated repeatedly by means of the reservoir for successively securing a series of slides against said slide registration surface for examination between evacuations of said reservoir by said pump.

3,848,963

MICROSCOPE STAGE FINGERS

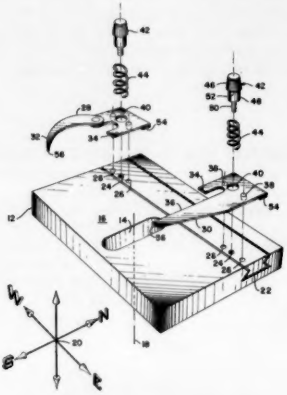
Theodore H. Peck, Irondequoit, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 154,335, June 18, 1971, abandoned. This application Feb. 14, 1973, Ser. No. 332,454
Int. Cl. G02b *21/26*
U.S. Cl. 350—90 **4 Claims**

1. In combination with a microscope stage having a substantially planar surface, a cross slide member movable in relation to the planar surface, and first and second spaced fingers with each finger having a free terminal end and an upper and lower surface, each finger being connected to the cross slide member in superposed relation to the planar surface, and one finger having a spring action to urge a microscope slide against the other finger to hold the microscope slide immobilized relative to the cross slide member, the improvement comprising:

fulcrum means attached to the lower surface of each finger; and

a spring member engaged to the upper surface of each finger between the terminal end and a plane of the fulcrum means transversing the upper surface, the spring member urging the terminal end of the fingers toward the surface of the stage thereby floating the terminal ends of



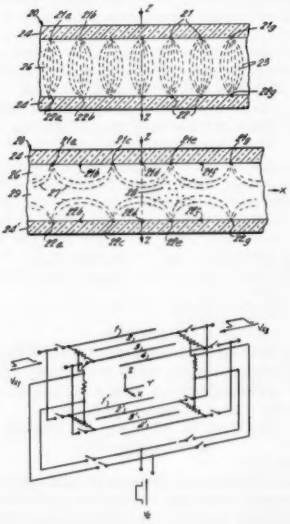
the fingers independently of any random movement of the cross slide member.

3,848,964

FORCED CLOSURE DIPOLAR ELECTRO-OPTIC SHUTTER AND METHOD

Alvin M. Marks, 100 Blair Rd., East, Oyster Bay, N.Y. 11771

Continuation of Ser. No. 42,813, June 2, 1970, abandoned, and a continuation-in-part of Ser. No. 556,113, June 8, 1966, Pat. No. 3,527,525. This application July 27, 1972, Ser. No. 275,504
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 R **16 Claims**



1. A light controlling device comprising at least a pair of spaced transparent sheets, a transparent suspending medium between said sheets, a layer comprising a plurality of elon-

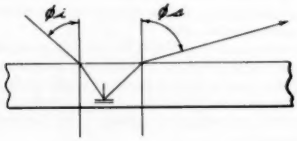
gated dipoles freely carried within the suspending medium, each said dipole having a first dimension in a direction of elongation on the order of one-half the wavelength of light and a second dimension normal to the direction of elongation substantially smaller than said first dimension, said dipoles presenting a cross-section to electromagnetic radiation which is a function of their orientation, whereby light transmission through the layer is at a maximum when the direction of elongation of said dipoles are oriented parallel to a light path and at a minimum when said dipoles are in random directions, a first series of spaced wirelike electrodes straight line parallel to each other disposed in a plane and carried by one of the transparent sheets, a second series of spaced wire-like electrodes straight line parallel to each other disposed in a plane parallel to the plane of the first series and carried by the other transparent sheet, means for electrically interconnecting selected electrodes into a plurality of electrode sets, and electrical circuit means selectively applying direct electrical potential differences to said electrode sets for creating interlaced electric field patterns within the dipole suspension layer to control the disposition of the dipoles within the suspension.

3,848,965

METHOD OF CONTROLLING MONOCHROMATIC COLLIMATED LIGHT BY CONTROLLING THE LIGHT REFLECTION BAND OF A LIQUID CRYSTAL

James E. Adams, Jr., Ontario, and Werner E. L. Haas, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 17, 1973, Ser. No. 407,385
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **17 Claims**



1. A method for placing a layer of an optically negative liquid crystal material in a diffusely light scattering condition comprising

a. providing a layer of an optically negative liquid crystalline material in its Grandjean texture state, said optically negative material having a light reflection band with center wavelength λ_o,

b. directing incident collimated monochromatic light upon said liquid crystal layer at an angle of incidence from 0° to about 15°, wherein said incident light is not diffusely scattered by said liquid crystal layer; and

c. applying to said liquid crystal film some external stimulus which is capable of changing the location of the light reflection band and applying said stimulus until the incident light is diffusely scattered by said liquid crystal layer whereby the diffusely scattered light is observable from a wide range of angles.

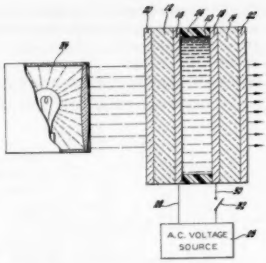
3,848,966

HOMEOTROPIC ALIGNMENT ADDITIVE FOR LIQUID CRYSTALS

George W. Smith, Birmingham, and Daniel B. Hayden, Port Huron, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 15, 1973, Ser. No. 406,636
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **2 Claims**

1. A nematic liquid crystal material which assumes a homeotropic texture comprising a nematic material having a negative dielectric anisotropy and having dissolved therein



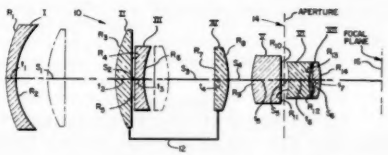
from small but effective amounts to 0.5 percent octadecylmalonic acid.

3,848,967

COMPACT SEVEN ELEMENT ZOOM LENS WITH OPTICAL COMPENSATION

David S. Grey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1972, Ser. No. 318,224
Int. Cl. G02b *15/14*
U.S. Cl. 350—184 **14 Claims**



1. A zoom lens the optical portion of which consists, in an axially aligned arrangement from the long conjugate side to the short conjugate side, of:

a negative lens element having a convex surface toward said long conjugate;

a positive second lens element having a strongly curved surface toward said long conjugate and a weaker surface toward said short conjugate;

a negative third lens element with a weakly curved surface toward said long conjugate and a stronger surface toward said short conjugate;

a positive fourth lens element with a weakly curved surface toward said long conjugate and a stronger surface toward said short conjugate;

a positive fifth lens element having a strong curvature toward said long conjugate and a weaker surface toward said short conjugate;

a negative sixth lens element; and

a positive seventh lens element with a weakly curved surface toward said long conjugate and a stronger surface toward said short conjugate.

3,848,968

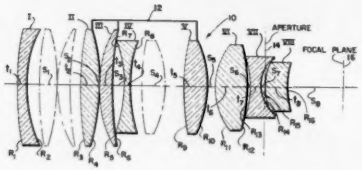
COMPACT EIGHT ELEMENT ZOOM LENS WITH OPTICAL COMPENSATION

David S. Grey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

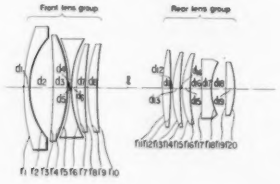
Filed Dec. 26, 1972, Ser. No. 318,226
Int. Cl. G02b *15/14*
U.S. Cl. 350—184 **15 Claims**

1. A zoom lens the optical portion of which consists, in an axially aligned arrangement from the long conjugate side to the short conjugate side, of:

a negative first lens component having a convex surface toward said long conjugate;
a positive second lens component;
a positive third lens component, having a convex surface toward said long conjugate, adjacent to said positive second lens component;
a negative fourth lens element;
a positive fifth lens component with unequally curved surfaces having its weaker curvature toward said long conjugate;
a positive sixth lens component having a strong curvature toward said long conjugate;
a negative seventh lens element with unequally curved surfaces having its weaker curvature toward said long conjugate; and
a positive eighth lens component.

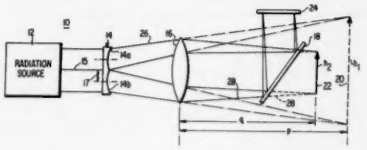


3,848,969
SHORT PHYSICAL LENGTH ZOOM LENS
Akira Tajima, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 5, 1973, Ser. No. 348,070
Claims priority, application Japan, Apr. 18, 1972, 47-38980
Int. Cl. G02b *15/16*
U.S. Cl. 350—184 **4 Claims**



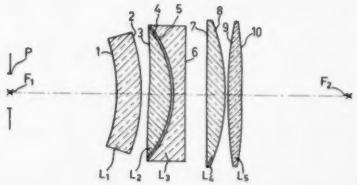
1. A short physical length optical objective of the zoom type comprising, in the direction of an incident light beam, a front lens group of negative power and a rear lens group of positive power axially separated from each other by a variable air space to effect magnification variation, said front group including, in succession in said direction, a negative meniscus lens element having a convex forward surface, a positive lens element having a strongly convex rear surface, a double concave lens element, and two positive meniscus lens elements each having a convex forward surface, said rear lens group comprising a plurality of mutually spaced lenses including, in succession in said direction, two positive meniscus lens elements each having a convex forward surface, a negative lens element having a concave rear surface, and a positive lens element.

3,848,970
APPARATUS FOR MEASURING AND CONTROLLING ANNULUS DIAMETERS OF IMAGES FORMED BY A PINCUSHION LENS
John B. Goodell, Baltimore, Md., assignor to Westinghouse Electric Corporation
Filed Sept. 7, 1973, Ser. No. 395,313
Int. Cl. G02b *3/06, 13/18, 15/14*
U.S. Cl. 350—189 **10 Claims**



1. An optical system for focusing radiation into an annulus of selected diameter, said system comprising:
a. a source of radiation;
b. first lens means for forming the radiation emanating from said source into an annulus;
c. second lens means for focusing the radiation along a path toward a work surface;
d. adjustable mounting means for receiving said first and second lens means and adjusting the spacing between said first and second lens means whereby the diameter of the radiation annulus is varied selectively;
e. display means disposed remotely from the radiation path and including a scale for measuring the diameter of the radiation annulus; and
f. reflective means disposable from a first position intercepting the radiation path wherein the radiation annulus is reflected to said display means for comparison with said scale, to a second position remote from the radiation path to permit the radiation annulus to be focused upon said work surface.

3,848,971
OBJECTIVE SYSTEM THE ENTRANCE PUPIL OF WHICH LIES OUTSIDE THE SYSTEM
Claude Hily, Champigny, France, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 264,534, June 20, 1972, abandoned.
This application Nov. 15, 1973, Ser. No. 416,238
Int. Cl. G02b *9/60*
U.S. Cl. 350—216 **7 Claims**



1. Objective system the entrance pupil diaphragm of which lies outside the system and the focal length of which is at least

50mm and which, viewed in the direction of the path along which the radiation travels, comprises in succession a correcting lens system and a converging lens system, the converging lens system comprising two converging components which are made of materials having Abbe numbers approximately equal to 55 and have powers differing by at most 20 percent, which converging components determine 90 percent of the power of the objective system, and in that the correcting lens system comprises in succession a first sub-system and a second sub-system, the second sub-system comprising two components one of which is converging and the other of which is diverging and which are made of materials having different dispersive powers, the absolute values of their powers being about equal while the sum of their powers is about one-fourth of the total power of the objective system, the first sub-system comprising a lens which is bounded by two concentric spherical surfaces the center of which lies in the entrance pupil, the lens having a thickness, measured along the optical axis, which is between 15 and 25 percent of the focal length of the objective system, and the distance, measured along the optical axis, between the outer surfaces of the first and last lens in the objective system is about one-half of this focal length.

3,848,972
LARGE-APERTURE TELEPHOTO LENS

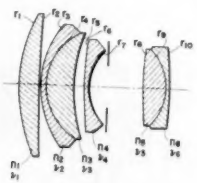
Sumio Nakamura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Shibuya-ku, Tokyo-to, Japan

Filed Apr. 11, 1973, Ser. No. 349,943

Claims priority, application Japan, Apr. 14, 1972, 47-036903

Int. Cl. G02b *9/34*

U.S. Cl. 350—223 **6 Claims**



1. A large-aperture telephoto lens system comprising a first lens, a second lens, a third and a fourth lens, wherein said first lens is a positive meniscus lens with its convex surface positioned on the object side, said second lens is a cemented positive meniscus doublet lens with its convex surface positioned on the object side, said third lens is a negative meniscus lens with its convex surface positioned on the object side and said fourth lens is a cemented positive doublet lens, and said large-aperture telephoto lens system satisfying the following conditions:

$$\nu_2 > \nu_3 > 45,\ n_3 > n_2,\ 0.3f > r_4 > 0.15f \quad (1)$$

$$\nu_6 > \nu_5 > 45,\ n_5 > n_6,\ 0.3f > r_9 > 0.15f \quad (2)$$

$$30 > \nu_4,\ n_4 > 1.70 \quad (3)$$

$$f_{123} \quad 2f \quad (4)$$

where reference symbols n_2, n_3, n_5, n_6 and n_4, respectively represent refractive indexes of the front and rear lenses of the cemented second and fourth lenses and refractive index of the third lens, reference symbols ν_2, ν_3, ν_4, ν_5, and ν_6, respectively, represent Abbe's numbers of said lenses, reference symbols r_4 and r_9, respectively, represent radii of curvatures of cemented surfaces of said second and fourth lenses, reference symbol f_{123} represents the total focal length of said first, second and third lenses and reference symbol f represents the total focal length of the lens system as a whole.

3,848,973
PRISM HOLDER FOR A DIGITAL LIGHT DEFLECTION SYSTEM

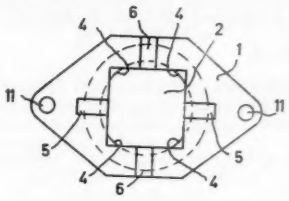
Josef Merz, Hamburg, Germany; Johannes Van Esdonk, and Joannes Franciscus Maria Janssen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 2, 1972, Ser. No. 303,249

Claims priority, application Germany, Nov. 6, 1971, 2155270

Int. Cl. G02b *7/18*

U.S. Cl. 350—287 **6 Claims**



1. A prism holder for a digital light deflection system, which system comprises one or more rectangular prisms and Kerr cells accommodated in a vessel filled with the liquid necessary for the Kerr cells; the holder comprising a plate-shaped member having a substantially rectangular aperture the dimensions of which are larger than the corresponding dimensions of a rectangular prims, a ring shaped support member on one side of said plate-shaped member and concentric with said aperture, said ring shaped support member having a diameter smaller than the diagonal and larger than the smallest side of said aperture and forming supporting points on one side of the aperture on which the prism can bear with at least a part of its outer edge, and fixing members secured to the plate-shaped member on the other side thereof for enclosing the prism in the aperture without exerting pressure on it.

3,848,974
HEAD-UP DISPLAY APPARATUS

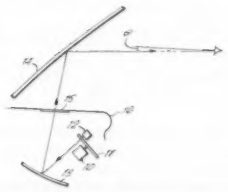
John Trevor Hosking, Lilac Cottage, Austenwood Ln., Gerrards Cross, Buckinghamshire, and Norman Blackham, Lane Farm, Sewell, near Dunstable, Bedfordshire, both of England

Filed Jan. 29, 1973, Ser. No. 327,532

Claims priority, application Great Britain, Jan. 28, 1972, 4250/72

Int. Cl. G02b *27/18*

U.S. Cl. 350—174 **17 Claims**



1. A head-up display apparatus for a motor vehicle comprising a curved windscreen for the vehicle, a speedometer having a datum mark and numeric characters movable relative to the datum mark in response to the speed of the vehicle, a source of collimated light for illuminating said datum mark and at least a portion of said numeric characters adjacent to said datum mark, a convex mirror, and a diverging lens positioned

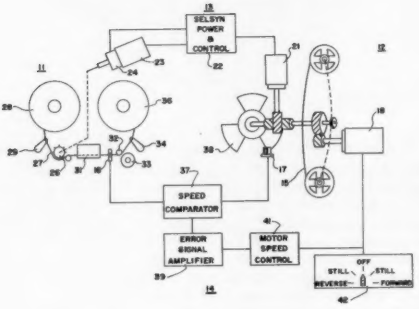
to project said illuminated datum mark and numeric characters onto said convex mirror, said curved windscreen being positoned to receive the image of said datum mark and of said characters reflected from said convex mirror to cause a display of the speed of the vehicle which appears to an observer to emanate from a position which is a finite distance from the observer.

3,848,975

SOUND FILM SYNCHRONIZATION SYSTEM AND METHOD

Phillip L. Bourret, P.O. Box 128, Los Altos, Calif. 94022, and Simon Yin, 3074 Locke Ct., Fremont, Calif. 94536

Filed June 1, 1973, Ser. No. 365,829
Int. Cl. G03b *31/04*
U.S. Cl. 352—5 **9 Claims**



1. A film and magnetic tape synchronization system including tape transport means for conveying tape past a transducer, film transport means for conveying film for projection and control means interconnected between the tape and film transport means, said control means including means responsive to the motion of the film transport means to control the motion of the tape transport means at non-performance speeds, and means responsive to the motion of the tape transport means to control the motion of the film transport means at performance speeds so that constant frame-by-frame synchronization of film and tape is provided.

3,848,976

METHOD AND APPARATUS FOR SYNCHRONIZED SHOOTING AND PROJECTION OF A MOVIE AND RECORDING AND PLAYBACK OF SOUND ON A TAPE

Noboru Tsujimoto; Katsuji Maruyama, and Haruo Misawa, all of Suwa City, Japan, assignors to Chinon Industries Incorporated, Suwa, Japan

Division of Ser. No. 187,333, Oct. 7, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 335,794
Claims priority, application Japan, Oct. 17, 1970, 45-91398
Int. Cl. G03b *31/04*
U.S. Cl. 352—17 **6 Claims**

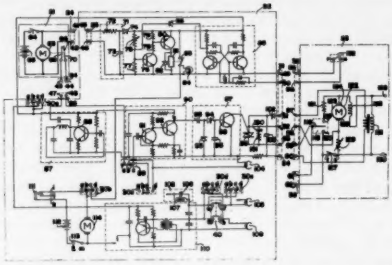
1. An appartus for synchronizing the movement of a visual image recording film and an audio signal information recording medium, comprising:

means for transporting said visual image film past an image conversion station, including a film transport motor, a power supply and first switching means interposed between said power supply and said film transport motor;

means for transporting said audio information medium past a recording or reproducing station, including an audio medium transport motor;

a delay circuit coupled to said power supply through said first switching means, including a switching transistor coupled in parallel with said film transport motor and means for switching said switching transistor between first and second states when a motor drive current for said film transport motor reaches a predetermined value;

further switching means coupled to the output of said delay circuit, said further switching means switching from a first



to a second state when said second transistor is switched into its second state; and

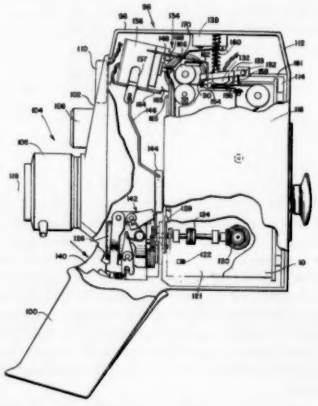
means coupling said further switching means to said audio medium transport motor to connect said audio medium transport motor to said power supply when said further switching means is switched into its second state.

3,848,977

MULTIPURPOSE, AUDIO-VISUAL CASSETTE SYSTEM

Donald T. Scholz, Watertown, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 28, 1973, Ser. No. 374,578
Int. Cl. G03b *31/06*
U.S. Cl. 352—14 **19 Claims**



1. A camera comprising:

a substantially light-tight camera housing;

means for receiving a film cassette in operative relation with said camera housing, such cassette including a cassette housing configured for retaining a strip of photographic film material, such cassette housing including a first opening configured for film exposure operations and opening defining means configured for sound operations;

selectively operative means for cooperating with such film strip when such cassette is operatively positioned within said receiving means for advancing such film strip serially across such openings, said advancing means including a first drive means for intermittently advancing incremental portions of such film strip across such first opening and

a second drive means for substantially constantly advancing such film strip across such opening defining means;

means located in operative relation with such first opening for exposing such incremental portions of such film strip at said first opening so as to record scene images thereon;

means including a sound-head mounted in said camera housing in operative relation with said opening defining means for providing sound recording upon or sound reproduction from such film strip;

means located in said camera housing in operative relation to such opening defining means for receiving a loop of such film strip extending through such opening defining means; and

means located in said loop receiving means for controlling at least one of said drive means to extend a portion of such film strip through such opening defining means and into said loop receiving means while other portions of such film strip to either side of such loop remain within such cassette housing so as to thereby initially form a loop of film extending from such cassette housing and for thereafter controlling the size of such loop during the advancement of such film strip so that with such cassette mounted in said camera such film strip may be exposed and sound recorded thereon without removing it from such cassette, such loop serving to isolate the constantly advanced portions of such film strip from the intermittently advanced portions thereof.

3,848,978

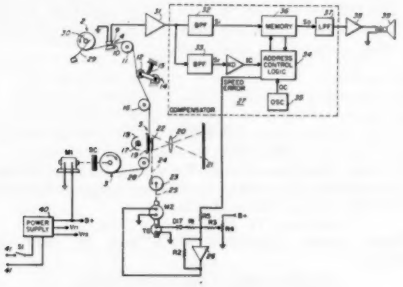
ANALOG INFORMATION STORAGE AND RETRIEVAL SYSTEM

William R. Wray, 46 Russell St., Brookline, Mass. 02167

Division of Ser. No. 294,317, Oct. 2, 1972. This application Feb. 11, 1974, Ser. No. 441,647

Int. Cl. G03b *31/00*

U.S. Cl. 352—30 **2 Claims**



1. In combination with a sound motion picture projector comprising film drive means for intermittently advancing a strip of film through a projection station, means located at said projection station for projecting images recorded on the film, and transducer means located at a playback station spaced from said projection station for reproducing an audio signal and a pilot signal simultaneously recorded on the film in synchronism with the recorded images, damping means located between said stations and adapted to engage a strip of film passing therebetween to produce a relatively uniform film speed at said playback station, a memory having a plurality of selectively addressable storage locations, first means for addressing said storage locations in a predetermined cyclic sequence in response to a series of applied input address signals, means for applying an audio signal reproduced by said transducer means to storage location addressed by said first means, second means for addressing said storage means in said predetermined cyclic sequence in response to a series of applied output address signals, speaker means, means connecting said speaker means to the storage location addressed by said second means, signal generating means responsive to said first and second means for sensing the distance in said sequence between the locations addressed by said first and second means and producing a first, a second or a third signal according as said distance is in a first range, a second range, or a third range, respectively, first address signal producing means controlled by said transducer means and said sensing means for applying input address signals to said first means at a rate determined by the frequency of the reproduced reference signal when said second or said third signal is present, and second address signal producing means for applying output address signals to said second means at a constant rate determined by the frequency at which the reference signal was recorded when said first or said second signal is present.

3,848,979

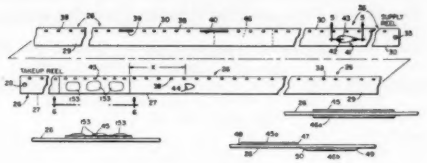
SELF-CLEANING PHOTOGRAPHIC TRANSPARENCY PROCESSING AND PROJECTION SYSTEM

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 261,153, June 9, 1972,. This application Oct. 31, 1973, Ser. No. 411,314

Int. Cl. G03b *23/02*

U.S. Cl. 352—78 R **3 Claims**



1. A photographic cassette, comprising an opaque housing, means forming a film gate in said housing, takeup and supply reels rotatably mounted in said housing, a strip of film having ends connected to said takeup and supply reels and extending therebetween through said film gate, said film being initially unexposed and primarily coiled on said supply reel, said cassette being adapted to cooperate with a camera for selective exposure of portions of said film in said film gate as said film is advanced onto said takeup reel to an exposure termination position, processing means in said housing responsive to manipulation of said film in said housing following its initial advance from said supply reel toward said takeup reel to said exposure termination position to apply processing composition to said film as it is first rewound onto said supply reel to a process termination position, said cassette being adapted to cooperate with film drive and projection apparatus for sequential projection of portions of said film in said film gate as said film is advanced onto said takeup reel to a projection termination position beyond said exposure termination position, and to be rewound to a rewind termination position on said supply reel beyond said process termination point, and a cleaning pad of absorbent material mounted on said film in position to move through said film gate as said film moves from said process termination position to said rewind termination position.

3,848,980

PROJECTOR APPARATUS AND SYSTEM EMPLOYING UNIQUE SCREEN

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

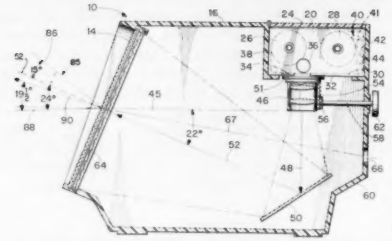
Continuation of Ser. No. 174,461, Aug. 24, 1971, abandoned. This application July 27, 1973, Ser. No. 383,082

Int. Cl. G03b *41/00*

U.S. Cl. 352—81 **6 Claims**

1. In a projection system including photographic film of the type having a recorded image formed at least in part by a

repetitive series of image forming segments arranged in a regular array, the improvement comprising a screen configured for projection of such recorded images thereto, said



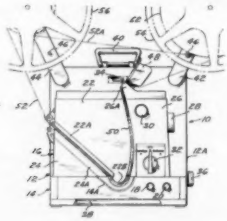
screen having a plurality of lenticular elements arranged in a regular array, and said plurality of elements provided in a 1:1 or larger ratio of small integers to the projected images of such image forming segments.

3,848,981

SELF-THREADING MOTION PICTURE PROJECTOR

Conkling Chedister, Barnegat, N.J., and Frank H. Beckman, New Britain, Conn., assignors to Kalart Victor Corporation, Plainville, Conn.

Filed June 14, 1973, Ser. No. 370,015
Int. Cl. G03b *1/56*
U.S. Cl. 352—157 **14 Claims**



1. A motion picture projector with self-threading mechanism, said projector comprising in combination:

an upright enclosure including in one of its outer walls a slot for insertion and removal of a length of film, said slot extending from one wall of the enclosure to another wall thereof, said one wall having an outwardly directed protrusion adjacent to the slot end in said wall, one said protrusion constituting a film guiding means for slidably guiding thereon a film portion in addition to the length of film insertable into the slot thereby extending the effective length of said slot;

a chassis stationarily mounted within said enclosure parallel to but spaced apart from said slotted wall;

a first sprocket rotatably mounted on said chassis, a second sprocket rotatably mounted on said chassis, either of said sprockets constituting a take-up sprocket or a supply sprocket, lower loop-forming means mounted on said chassis pivotal between a loop-forming position and a retracted position, an upper loop-forming means mounted on said chassis pivotal between a loop-forming position and a retracted position, said sprockets and said loop-forming means being on the chassis side facing said slotted wall and a film holding means including a stationarily mounted film channel;

film loading and threading means pivotally supported by said one wall of the enclosure, said loading and threading means being pivotal between a first limit position constituting the film loading position and a second limit position constituting the film threading position;

a first locking means movable between an inactive position and a locking position for locking a portion of film within the slot to the first sprocket, a second locking means movable between an inactive position and a locking position for locking a portion of film within the slot to the second sprocket, said second locking means including a first pressure means supported on said loading and threading means for pivotally moving in unison therewith, a first actuating means for moving the lower loop-forming means from the loop-forming position to the retracted position, a second activating means for moving the upper loop-forming means from the loop-forming position to the retracted position and a second pressure means movable into and out of a pressure position holding film extending between said pressure means and the channel in the latter; and

linkage means operatively coupling said first and second locking means, said first and second activating means and said second pressure means to said loading and threading means for sequential operation of the locking means, the activating means and the second pressure means,

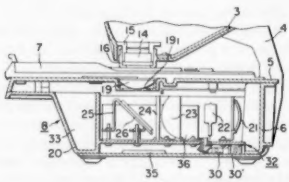
pivoting of said loading and threading means from the loading position through a first predetermined angle operating the first locking means for locking the respective film portion to the first sprocket, pivoting of said means through a second predetermined angle operating the first actuating means for moving the lower loop-forming means into the retracted position, pivoting of said means through a third predetermined angle operating the second activating means for moving the upper loop-forming means into the retracted position, pivoting of said means through a fourth predetermined angle causing the first pressure means on said loading and threading means to slide the film portion guide on said protrusion into the slot and locking said film portion to the second sprocket and pivoting of said means through a fifth predetermined angle moving said second pressure means into the position holding the film in the channel, said fifth angular movement of the loading and threading means placing the same in the second limit position.

3,848,982

MICROFILM READER

Akira Shoji, Yokohama; Hitoshi Yanagawa, Tokyo, and Takashi Hirashima, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1972, Ser. No. 285,259
Claims priority, application Japan, Sept. 15, 1971, 46-84076[U]
Int. Cl. G03b *23/08, 21/20, 21/11*
U.S. Cl. 353—27 **4 Claims**



1. A microfilm reader for reading micro images recorded on a microfilm comprising a housing having an opening, a projection screen disposed in said housing, optical means for projecting images on said microfilm toward said screen; a first light source unit having a first base disposed thereon a main lamp, an optical system for directing the light from said main

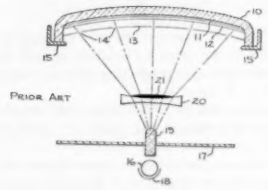
lamp to said microfilm and a plug connected to said main lamp; a second light source unit having a second base disposed thereon an auxiliary lamp connected to an auxiliary electric source, an optical system for directing the light from said auxiliary lamp to said microfilm and a plug not electrically connected to said auxiliary lamp; said first and second bases having said respective plugs at corresponding fixed positions and having the same configuration for permitting them to be selectively and exchangeably fitted into and detached from said opening of said housing in a drawer-like fashion; and a snap member fixedly provided in said housing for holding either of said bases by engaging either of said plugs when either of said light source units are inserted in said opening, said snap member being electrically connected to an AC electrical source.

3,848,983

OPTICAL SYSTEM FOR PROVIDING UNIFORM EXPOSURE OF A PHOTOSENSITIVE SURFACE

Elmer G. Fridrich, Chardon, Ohio, assignor to General Electric Company, Syracuse, N.Y.

Filed June 23, 1971, Ser. No. 155,727
Int. Cl. G03b *27/00*
U.S. Cl. 95—1 R **3 Claims**



1. Apparatus for applying actinic energy of substantially uniform intensity to a photosensitive surface, comprising:

lamp means comprising a short, linear arc adapted to emit actinic energy; and

means for rotating said lamp means with respect to the photosensitive surface about an axis extending substantially through the center of said arc, said lamp means being oriented such that said arc is inclined to the axis of rotation of said lamp means in order to direct the most intense energy from said lamp means toward portions of the photosensitive surface more distant from said lamp means than other portions of the photosensitive surface.

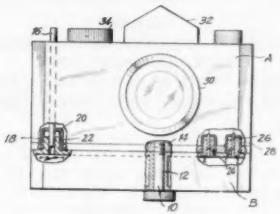
3,848,984

SINGLE LENS REFLEX CAMERA

Kyusei Kanno, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Mar. 11, 1974, Ser. No. 450,383
Claims priority, application Japan, Mar. 23, 1973, 48-32756
Int. Cl. G03b *7/08, 17/00*
U.S. Cl. 354—38 **8 Claims**

1. In a camera, housing means, casing means, and means detachably connecting said casing means to said housing means, said housing means carrying manually operable means for manually determining exposure variables which include exposure time and diaphragm aperture, and automatic means for automatically determining at least one of said variables, said automatic means being carried in part by said housing means and in part by said casing means so that when the latter is detached from said housing means a fully manual operation of the camera can be achieved while when said casing means is connected with said housing means automatic determination of at least said one variable can be achieved, said housing means carrying a movable means supported by said housing means for movement in preparation for making an exposure, and motion transmitting means extending between said housing means and casing means when the latter is connected with said housing means for transmitting movement from said movable means through said motion transmitting means to the



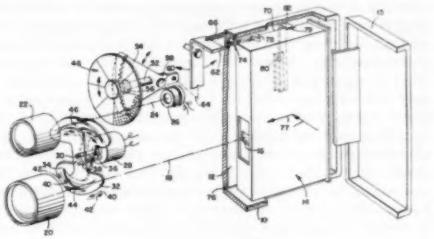
interior of said casing means, said casing means carrying in its interior as the part of said automatic means which is situated in said casing means a means which is acted on by said motion transmitting means in response to movement of said movable means for controlling, at least in part, the part of said automatic means which is carried by said casing means.

3,848,985

AUTOMATIC EXPOSURE CONTROL SYSTEM

Stewart Bennett, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 214,632, Jan. 3, 1972, abandoned.
This application Dec. 7, 1973, Ser. No. 422,972
Int. Cl. G03b *7/08*
U.S. Cl. 354—41 **18 Claims**



1. A photographic system comprising:

A film handling cassette including:

photographic material;

first means for indicating one of a plurality of mutually exclusive ranges of film speed, said one range embracing the speed of said photographic material; and

second means for indicating the particular speed of said photographic material within said one range; and

a camera including:

an objective lens;

means for receiving said cassette with its said photographic material disposed in operative relationship with said lens;

a light sensitive element responsive to scene light;

means responsive to said light sensitive element for varying the amount of scene light impinging on such photographic material, said scene light varying means being selectively operable in more than one of a plurality of operating ranges respectively correlated to said plurality of film speed ranges;

means responsive to said first indicating means when said cassette is positioned in said receiving means for regulating said light varying means for operation in the one film speed range; and

means responsive to said second indicating means when said cassette is positioned in said receiving means for regulating the amount of scene light received by said light sensitive element in accordance with the particular speed of said photographic material within said one range.

3,848,986
CAMERA SHUTTER CONTROLS FOR EXTREMELY SHORT EXPOSURE TIME

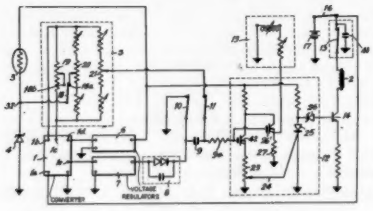
Seinan Miyakawa, and Nobuhiro Noda, both of Tokyo, Japan, assignors to Asahi Kogako Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Division of Ser. No. 251,761, May 9, 1972. This application Apr. 23, 1973, Ser. No. 353,884

Claims priority, application Japan, May 12, 1971, 45-37319; May 13, 1971, 46-37735; May 21, 1971, 46-41155

Int. Cl. G03b *7/08*

U.S. Cl. 354—51 **4 Claims**



1. In a camera having circuitry for automatically determining the extent to which film in the camera is exposed, said circuitry including an electromagnetic means for terminating an exposure when said electromagnetic means becomes unenergized, switching circuit means electrically connected to said electromagnetic means for controlling the deenergizing thereof, signal-transmission means electrically connected to said switching circuit means for transmitting to the latter a signal corresponding to exposure-determining factors for operating said switching circuit means to deenergize said electromagnetic means in accordance with said factors, and control means electrically connected with said switching circuit means for providing an automatic electrical control and a mechanical control, for causing the switching circuit means to deenergize said electromagnetic means after a variable time duration when providing said automatic control, and for causing the switching circuit means to deenergize said electromagnetic means after a pre-determined extremely short fixed time duration when providing said mechanical control, said switching circuit means including a high input impedance transistor electrically connected to said signal transmission means for receiving a signal therefrom and having an output, a thyristor for deenergizing said electromagnetic means, and wherein said control means includes a variable resistor means connected between said output of said transistor and said thyristor, said variable resistor means having an adjusting component having a position for operating said thyristor with a bleeder voltage for deenergizing said electromagnetic means, said last-mentioned position providing said mechanical control.

3,848,987
CASSETTE TYPE SEQUENCE CAMERA

Warren D. Novak, Chappaqua, N.Y., assignor to The Mosler Safe Company, Hamilton, Ohio

Filed May 14, 1973, Ser. No. 360,361

Int. Cl. G03b *17/42, 9/10, 1/22*

U.S. Cl. 354—212 **5 Claims**

1. A camera comprising,

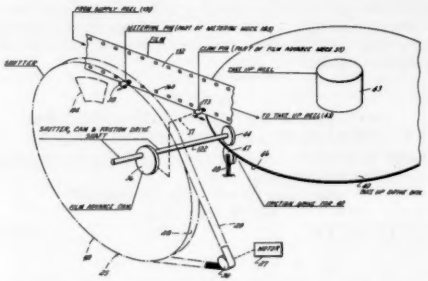
a housing,

a lens mounted in said housing,

said housing having a chamber adapted to receive a cassette having film exposed at one side thereof adjacent said lens, a rotary shutter mounted in said housing between said lens and said chamber,

a motor mounted in said housing and drivably connected to said shutter,

a film advance mechanism mounted in said housing adjacent said lens and operably connected to said shutter to advance said film intermittently as said shutter rotates,



a drive disc rotatably mounted in said housing in a plane perpendicular to the plane of rotation of said shutter,

a spindle on said drive disc projecting into said chamber and connectable to a cassette,

a friction wheel carried by said shutter and rotatable therewith, said friction wheel engaging one surface of said drive disc,

and a pinch roller mounted in said housing and engageable with the opposite surface of said drive disc adjacent said friction wheel.

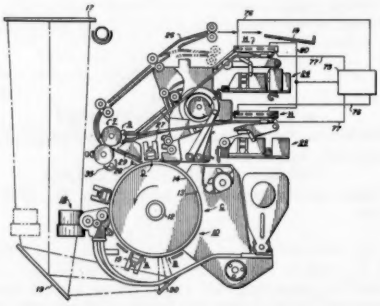
3,848,988
MOISTURE CONTROL DEVICE

Raghulinga R. Thettu, and Haribhajan S. Kocher, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed June 11, 1973, Ser. No. 368,924

Int. Cl. G03g *15/22*

U.S. Cl. 355—3 R **7 Claims**



1. In a copying machine having a supply station for storing final support material upon which copies are to be produced and a heat fusing station for fixing said copies, the improvement comprising

an evaporator, containing a working substance, which vaporizes at a predetermined temperature, for removing heat energy from the fuser system,

a condensor positioned in said support material supply station, being operatively connected in fluid flow commu-

nication with said evaporator means, for condensing said vapor of the working substance and discharging the latent energy into the supply region, and

means associated with said condenser for providing energy to the working substance in said condenser when the rate of discharge falls below a predetermined level.

3,848,989

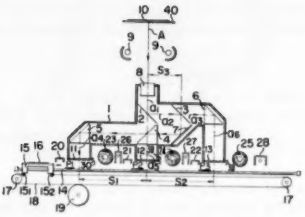
MULTICOLOR ELECTROPHOTOGRAPHIC REPRODUCTION DEVICE

Keizo Yamaji, and Akira Kurahashi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 40,942, May 25, 1970, abandoned. This application Jan. 15, 1973, Ser. No. 323,743

Int. Cl. G03g *15/00*

U.S. Cl. 355—4 **1 Claim**



1. An electrophotographic reproduction apparatus capable of continuously producing a polychromatic reproduction of a color original comprising: light means for forming a light image of the color original, a single photoconductive surface movable linearly at its exposing position, optical means for separating the color image formed by said light means into at least two color separation images, means for conducting said color separation images along different optical paths of equal length to said photoconductive surface, means for separately forming on said photoconductive surface electrostatic latent images of each of said color separation images, means for separately developing each of said color separation images with different marking material, the color of which corresponds to the separation image being developed by said marking material, and means for transferring and affixing the developed images in superimposed relationship onto a copying material, and cleaning means for said photoconductive surface for repetitive use.

3,848,990

ELECTROPHOTOGRAPHIC COLOR COPYING APPARATUS

Osamu Otubo; Isamu Terashima, and Norio Akutsu, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

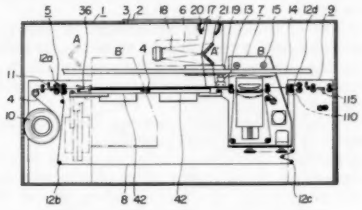
Filed Apr. 11, 1973, Ser. No. 350,205

Claims priority, application Japan, Apr. 12, 1972, 47-36063

Int. Cl. G03g *15/22*

U.S. Cl. 355—4 **14 Claims**

1. An electrophotographic color copying apparatus comprising a main housing, at least one transport belt for transporting and supporting a recording paper, guide means for directing the transport belt along a predetermined path, the predetermined path having at least a first planar portion and a substantially U-shaped portion extending substantially transversely to the first planar portion, the transport belt along the U-shaped portion delimiting a recess area for accommodating a developing means, means for moving the recess area from a first position to a second position along the planar portion of the predetermined path, means for feeding a recording paper to a predetermined position along the planar portion of the predetermined path by the transport belt, means for holding the recording paper at the predetermined position, means for uniformly electrically charging the surface of the recording paper held at the predetermined position, means for exposing the recording paper held at the predetermined position to light reflected from an original, the reflected light being projected onto the recording paper through an optical filter unit so as to form a letent charged image on the recording paper, the developing means being located in the recess area for developing a



visible image from the latent charged image on the recording paper with toners of at least two primary colors, the developing means being movable along the planar portion of the predetermined path when the recessed area is moved from the first position to the second position so as to engage with the recording paper to develop the visible image on the recording paper.

3,848,991

ELECTROPHOTOGRAPHIC COPYING APPARATUS

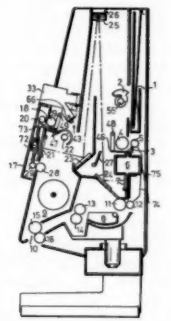
Karl Gustav Zeuthen, Gentofte, Denmark, assignor to Rexomi A/S, Copenhagen, Denmark

Filed Oct. 12, 1973, Ser. No. 405,907

Claims priority, application Denmark, Oct. 17, 1972, 5123/72

Int. Cl. G03g *15/00*

U.S. Cl. 355—14 **7 Claims**



1. An electrophotographic copying apparatus, comprising

mutually spaced, substantially vertical first and second conveying paths for an original to be reproduced and a copy sheet having a photosensitive surface to receive a reproduction of said original, respectively;

a main driving system including an electric motor for advancing the original and the copy sheet in a downwards direction along said conveying paths;

an exposure lamp arranged at said first conveying path for illuminating the original;

a corona charging device, an exposure window, a developing device and a drying device arranged in order of succession in the advancing direction of the copy sheet along said second conveying path;

a supply of copy sheets arranged above said second conveying path;

a catch mechanism for taking off a single copy sheet at a time from said sheet supply and advancing said sheet towards said second conveying path;

spring biased stop members arranged to be inserted into said first and second conveying paths for defining substantially vertical original and copy sheet start positions at the upper ends of said conveying paths, the original and the copy sheet being kept in these start positions by their own weight;

and a pair of advancing rollers arranged in each of said conveying paths above said stop members, the rollers of each of said roller pairs being removed from each other when an original and a copy sheet are present in said start positions,

wherein the improvement comprises that programming means are provided, which comprise

a first switching device for switching on and off the current supply to the electric motor of the main driving system; a second switching device for switching on and off the current supply to the corona charging device and the exposure lamp;

first and second control mechanisms for retracting the spring biased stop members from each of said conveying paths and simultaneously coupling together the rollers of said roller pairs;

a number of actuating members for actuating and deactuating said first and second switching devices and said first and second control mechanisms;

a mannually operated start button to influence the actuating member for said first switching device;

a cam wheel connected with said catch mechanism;

and a single, circular disc-shaped timing member mounted for rotation in the copying apparatus and coupled with the main driving system, said timing member being provided on one lateral surface with a number of radially displaced, substantially circular actuating surface sections, each of which is in operative engagement with one of said actuating members to operate said members in a timed sequence during a single revolution of the timing member, the surface section associated with the actuating member for the first switching device being formed so as to operate said actuating member to actuate the first switching device to switch on the current supply to the electric motor of the main driving system when said actuating member is influenced by said start button, whereby rotation of the timing member will be started, the timing member furthermore having a number of teeth arranged in a circular arc outside said actuating surface sections so as to get in operative engagement with said cam wheel in a timed sequence with the operation of said actuating members.

3,848,992

DEVELOPER BLADE CLEANING

Richard E. Smith, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 3, 1973, Ser. No. 356,985
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **12 Claims**

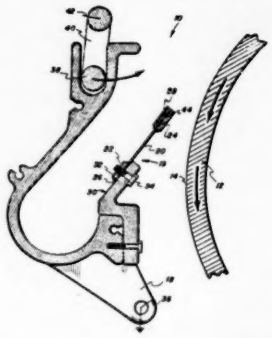
1. A photoreceptor blade cleaning system for cleaning dry developer material from a moving photoreceptor surface in electrophotographic apparatus comprising:

a cleaning blade having a main portion of thin planar material with a mounting edge and an opposing free edge substantially spaced from said mounting edge,

said cleaning blade further having a cleaning tip portion comprising a body of elastomer material mounted to said free edge of said main portion, extending over only said free edge and substantially spaced from said mounting edge,

said main portion being resiliently flexible only perpendicular said planar dimensions thereof, and being cantilever mounted by blade mounting means at said mounting edge of only said main portion, extending generally parallel to said photoreceptor surface for substantial resilience only in a direction toward or away from said photoreceptor surface,

said blade being mounted to project toward the direction of motion of said photoreceptor surface when in cleaning engagement therewith to provide a chiseling cleaning



engagement of said cleaning tip against said surface,

and means for pressing said tip portion of said blade into substantially uniform cleaning engagement with said photoreceptor surface,

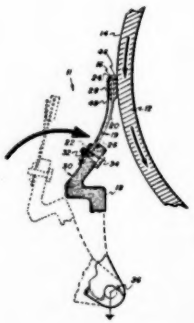
said main portion of said blade being sufficiently stiff to prevent blade tuck-under from high frictional forces between said tip and said photoreceptor surface.

3,848,993

SUPPORTED DEVELOPER BLADE CLEANING

Christ S. Hasiotis, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 3, 1973, Ser. No. 356,986
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **7 Claims**



1. A photoreceptor blade cleaning system for cleaning dry developer material from a moving photoreceptor surface in electrophotographic apparatus comprising:

a cleaning blade having a main portion of thin planer material with a mounting edge and an opposing free edge substantially spaced from said mounting edge,

said cleaning blade further having a cleaning tip portion comprising a body of elastomer material mounted to said free edge of said main portion substantially spaced from said mounting edge,

said main portion being resiliently flexible only perpendicular said planar dimensions thereof, and being cantilever mounted by blade mounting means at said mounting edge of said main portion, and extending generally parallel to said photoreceptor surface for substantial resilience only in a direction toward or away from said photoreceptor surface,

said cleaning blade being mounted to project toward the direction of motion of said photoreceptor surface when in cleaning engagement therewith to provide a chiseling cleaning engagement of said cleaning tip against said surface,

and means for pressing said tip portion of said cleaning blade into substantially uniform cleaning engagement with said photoreceptor surface, including an independent backing blade member cantilever mounted independently from said main portion of said cleaning blade,

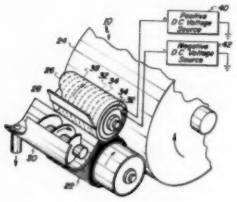
said backing blade having a free edge resiliently engaging said cleaning tip portion to uniformly support and urge said cleaning tip portion against said photoreceptor.

3,848,994

LINE CHARGE TONER CLEANING

Lawrence J. Fraser, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1973, Ser. No. 410,836
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **9 Claims**



1. In electrostatographic apparatus in which electrostatically attractable imaging material is cleaned from an imaging surface, the improvement comprising:

a moving surface cleaning member making a cleaning engagement with said imaging surface for removing said imaging material from said imaging surface;

a moving surface pick-off member making a cleaning engagement with said cleaning member for removing said imaging material from said surface of said cleaning member to said surface of said pick-off member;

electrostatic field means for generating a multiplicity of closely adjacent differently charged areas on said pick-off member in said engagement with said cleaning member for producing a plurality of non-uniform imaging material attractive electrical fringe fields between said pick-off member and said cleaning member;

and imaging material removal means for removing said imaging material from said pick-off member.

3,848,995

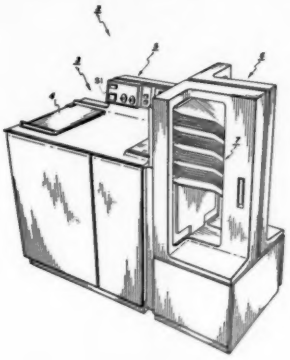
COPIER/DUPLICATOR SYSTEM

John F. Gauronski, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 30, 1973, Ser. No. 365,352
Int. Cl. G03g *15/00*
U.S. Cl. 355—26 **6 Claims**

1. In a copier/duplicator system in which copy sheets are reproduced from documents and distributed for sorting into trays moved past a sheet discharge zone to sort copy sheets into collated sets, an improved control circuit for minimizing the delay between sorting runs comprising:

first circuit means including first gate means to receive signals indicative of a copier/duplicator system ready condition and a second gate means to receive signals indicative of a start print condition,



second circuit means including third gate means to receive signals from said first circuit means and to receive signals from machine control indicative of the position of said moving trays to start another sorting cycle,

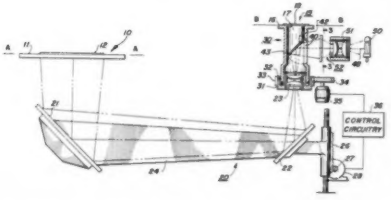
said third gate means generating output signals to reset said first circuit means and initiate the next sorting cycle.

3,848,996

PHOTOCOMPOSING APPARATUS

Justin Christian Goding, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 16, 1973, Ser. No. 360,725
Int. Cl. G03b *27/70*
U.S. Cl. 355—43 **6 Claims**



1. A photocomposing device for positioning a movable optical exposure system to project a light image of an original onto a recording medium within a predetermined format including:

a platen for supporting an original to be reproduced within the object plane of the photocomposing device,

an imaging station for supporting a recording medium within the image plane of the photocomposing device,

movable exposure means for projecting a light image of the original, supported in said object plane, onto the recording medium supported in said image plane, said exposure means being arranged to be repositionable between the object and image planes to minify or magnify the image of the original projected onto the image plane,

means to create a light image at the platen surface indicative of the original surface area recordable within said predetermined format for any position of said optical system, said means to create a light image including

an opaque mask positioned off the optical axis of the exposure system having a transparent frame formed therein;

means to illuminate said mask; and

a mirror means interposable into the optical path of the exposure means for projecting a light image of the mask information back through said exposure means onto said viewing platen.

3,848,997

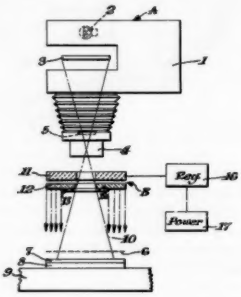
AUXILIARY LIGHTING DEVICE FOR ENLARGERS

Leopold Muehloegger, Brixen, Italy, assignor to Durst A. G. Fabrik Fototechnischer Apparate, Bozen, Italy

Filed June 26, 1973, Ser. No. 373,757

Int. Cl. G03b *27/54*

U.S. Cl. 355—71 **5 Claims**



1. An auxiliary lighting device for an enlarger having a lens which projects an image on photosensitive material comprising an annular electroluminescent plate disposed in the immediate proximity of the lens, the annular electroluminescent plate having a central aperture to permit the light coming from the lens to pass through it, and the annular electroluminescent plate having means associated there with for uniformly exposing the photosensitive material to its illumination.

3,848,998

APPARATUS FOR THE PRODUCTION OF PHOTOPOLYMER PLATES

Saku Yonekura, Tokyo; Hideaki Miyamoto, and Akio Namba, both of Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka and Tokyo Kikai Seisakusho, Ltd., Tokyo, Japan

Filed May 2, 1973, Ser. No. 356,532

Claims priority, application Japan, May 2, 1972, 47-44054; May 2, 1972, 47-44053; May 2, 1972, 47-44052; May 2, 1972, 47-44051; May 2, 1972, 47-44050

Int. Cl. G03b *27/30*

U.S. Cl. 355—100 **12 Claims**

1. An automated apparatus for producing a photopolymer plate having relief images areas which comprises;

a. rigid support plate for receiving an image-bearing transparency and a protective film thereon, said rigid support plate and said protective film being capable of transmitting actinic radiation therethrough;

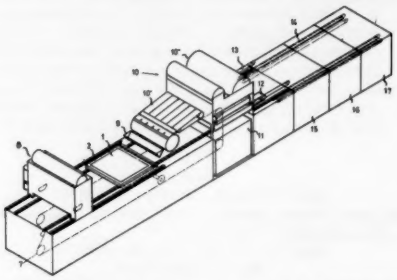
b. means for covering said image-bearing transparency with said protective film in intimate contact therewith said means being capable of effecting relative reciprocating movement in relation to said rigid support plate;

c. means for feeding a liquid photosensitive material onto said protective film to form a layer of photosensitive material;

d. means for laminating a backing material onto said layer of photosensitive material, said backing material being capable of transmitting actinic radiation;

e. exposure means including a rigid plate, and being adapted to receive said rigid support plate below said rigid plate, and said exposure means further comprising an upper actinic light source and a lower actinic light source being provided on a frame of said exposure means, said rigid plate being provided on a frame of said exposure means, said rigid plate being capable of transmitting actinic radiation;

f. actuating means for transferring said rigid support plate from a protective film feeding station to an exposure station, and for successively operating said liquid photosensitive material feeding means and said laminating



means during the transference of said rigid support plate to said exposure station;

g. means for removing said protective film from the lower surface of said exposed layer;

h. means for removing unhardened non-exposed portions in said layer to form relief images on said backing material;

i. means for treating said relief images on said backing material at a washing-out station;

j. means for subjecting said relief images to the postexposure;

k. means for transferring said backing material from a washing-out station through the post-exposure station.

3,848,999

OPTICAL RANGE MEASURING APPARATUS

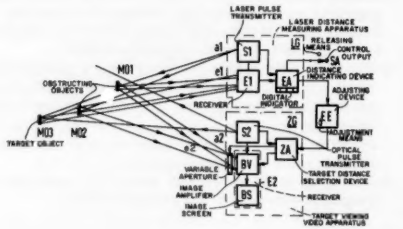
Georg V. Dall'Armi, Unterhaching, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 26, 1971, Ser. No. 192,143

Claims priority, application Germany, Oct. 29, 1970, 2053111

Int. Cl. G01c *3/08*

U.S. Cl. 356—4 **17 Claims**



1. Optical range measuring apparatus for one of a plurality of measuring objects including a target measuring object, comprising laser distance measuring apparatus (LG) having a first laser pulse transmitter (S1), a first receiver (E1) connected to the first transmitter and a distance indicating device (EA) connected to the first transmitter and the first receiver for determining and measuring the distance of at least one measuring object; target-viewing video apparatus (ZG) having a second optical pulse transmitter (S2) aligned with the mea-

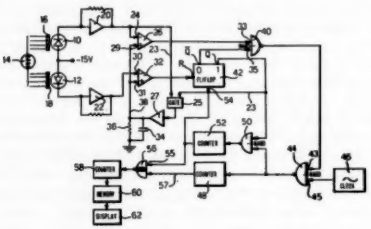
suring objects, a second receiver (E2) having an image amplifier (BV) connected to the second transmitter and an image screen (BS) connected to the image amplifier and a target distance selection device (ZA) connected to the second transmitter and the image amplifier of the second receiver for opening the second receiver after the elapse of an adjustable period of time after each pulse of the second pulse transmitter is transmitted; and an adjusting device (EE) connected between the distance indicating device of the laser distance measuring apparatus and the target distance selection device of the target-viewing video aparatus for selectively adjusting said target distance selection device to the distance of one of the measuring objects measured by the laser distance measuring apparatus.

3,849,000

DIGITAL DISPLAY OPTICAL PYROMETER

Paolo Soardo, and Mario Pasta, both of Turin, Italy, assignors to Institute Elettrotecnico Nazionale Galileo Ferraris, Turin, Italy

Filed May 17, 1973, Ser. No. 361,085
Claims priority, application Italy, May 24, 1972, 68641/72
Int. Cl. G01j *5/60*
U.S. Cl. 356—45 **8 Claims**



1. Digital display optical pyrometer apparatus comprising photometric means adapted to emit respectively a first and a second electrical signal, corresponding to respective linear functions of two radiant energy fluxes incident on said means, circuit means connected to said photometric means to process the signals emitted thereby and to supply a digital signal proportional to the radiation temperature associated with said energy fluxes and visual display means piloted by said digital signal and providing a digital measurement of the said temperature, wherein the improvement consists in:

a. a storage circuit having a discharge time constant proportional to the reciprocal of a preselected constant A;

b. a charging and comparator circuit adapted to apply to said storage circuit a voltage not less than the product of said first signal and a second preselected constant C, for a predetermined first time interval, and to allow successively the discharge of the storage circuit to the value of the second signal so as to cause a sequence of charge and discharge cycles of said storage circuit to take place;

c. a source of electrical clock pulses; and

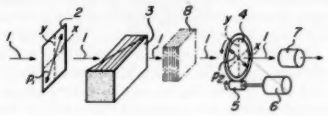
d. a logic circuit including first counter means arranged to count a number of pulses emitted by the source of clock pulses, said number being proportional to the expression $[1n(1/C) - B]/A$ wherein B is a third preselected constant and to emit at the termination of said counting an output pulse which initiates the functioning of said charging and comparator circuit to allow discharge of the storage circuit, said logic circuit further including second counter means which enables the application to said visual display means of the pulses counted by said first counter means during a preselected time interval.

3,849,001

POLARIZATION INTERFERENCE CORRELATION SPECTROMETER

Masaru Inoue; Toshio Kaneko; Koichi Matsumoto; Makoto Ishikawa, and Nobuo Akitomo, all of Katsuta, Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed June 16, 1972, Ser. No. 263,454
Claims priority, application Japan, June 18, 1971, 46-43307
Int. Cl. G01j *3/00*
U.S. Cl. 356—98 **15 Claims**



1. A polarization interference correlation spectrometer comprising:

first means for polarizing a light beam;

second means for splitting the polarized beam obtained from said first means into two orthogonal polarization components and for generating a difference between the optical paths of the two orthogonal polarization components;

third means for deriving two orthogonal polarization interference components from the two orthogonal polarization components obtained from said second means; and

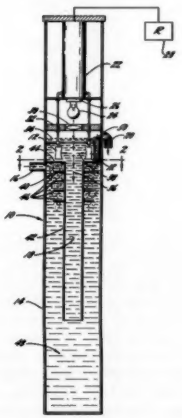
fourth means for deriving an electric modulated signal based on the two polarization interference components obtained from said third means.

3,849,002

METHOD AND APPARATUS FOR ELIMINATING AIR DURING FLUID TURBIDITY MEASUREMENT

Clifford C. Hach, Ames, Iowa, assignor to Hach Chemical Company, Ames, Iowa

Filed May 11, 1973, Ser. No. 359,446
Int. Cl. G01n *21/00, 1/10*
U.S. Cl. 356—103 **6 Claims**



1. In a turbidimeter for sensing the turbidity of a continuously flowing fluid sample including a container for supporting a vertical column of fluid to be tested, means defining a drain opening in said container for establishing an upper surface on said fluid column whereby the fluid may drain from the column at the level of said upper surface, inlet means for trans-

mitting a continuous flow of fluid to said column, a light source fixed relative to said container for directing a beam of light down into said fluid column, means including photoelectric cells surrounding said light beam and being disposed facing the beam passing through the fluid column to define a measuring zone, the electrical output of said cells being dependent upon the amount of light energy from said light beam that is reflected toward the photoelectric cells by particles suspended in said fluid, the improvement comprising, an air trap zone disposed between the inner wall of the container and the central portion of the fluid column through which said light beam passes, said air trap zone being in communication with the inlet means transmitting said fluid flow to the column, vent means connecting said air trap zone to said drain outlet, and said air trap means extending downwardly a substantial distance along the length of said container so that fluid flowing through said air trap zone is present a sufficient length of time to eliminate air and reach a quiescent state prior to flowing up through the central column to the measuring zone and departure of said fluid through said drain.

3,849,003

INTERFEROMETER APPARATUS FOR MEASURING THE ROUGHNESS OF A SURFACE

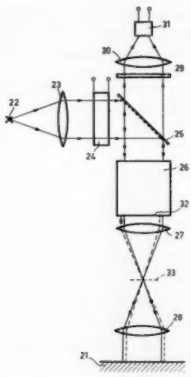
Christiaan Hendrik Frans Velzel, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 126,149, March 19, 1971, abandoned, and a continuation-in-part of Ser. No. 859,989, Sept. 22, 1971, Pat. No. 3,676,006. This application Apr. 6, 1973, Ser. No. 348,686

Claims priority, application Netherlands, Mar. 25, 1970, 7004247

Int. Cl. G01b *9/02*

U.S. Cl. 356—109 **3 Claims**



1. An apparatus for measuring the roughness of a surface, comprising an electro-optical modulator having electrical terminals for receiving a periodic electrical signal, means for projecting substantially monochromatic radiation through the electro-optical modulator, the electro-optical modulator thereby providing two aligned orthogonally polarized sub-beams having a periodically varying phase difference, an interferometer in the path of the sub-beams from the electro-optical modulator for spatially displacing the sub-beams in accordance with the direction of polarization, means in the interferometer for continuously varying the spatial displacement of the subbeams, means for superimposing the initially displaced sub-beams on the surface to be measured and for directing reflected radiation from the surface back to the interferometer wherein the spatial displacement between the sub-beams is removed, an analyzer in the path of the recombined reflected sub-beams, and a photo detector in the path of the beams passing through the analyzer.

3,849,004

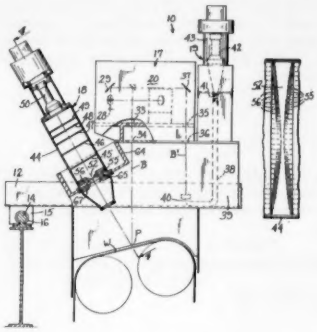
PHOTO-DETECTOR FOR OPTICAL INSPECTION SYSTEM

Henry R. Cofek, Fairfield, Conn., assignor to Geisco Associates, Cheshire, Conn.

Filed Oct. 11, 1973, Ser. No. 405,448

Int. Cl. G01n *21/18*

U.S. Cl. 356—200 **2 Claims**



1. In an optical inspection system of the type in which a beam of light is scanned across the surface of material to be inspected on a photodetector is positioned to be responsive to changes in the level of light energy on said material due to discontinuities therein; a photodetector comprising a housing having an elongated opening at the lower portion thereof adapted to admit light from the beam on the material, said opening being sufficiently long as to cover the dimension of scan of the beam across the material, a photo-sensitive device positioned in said housing above said opening, said photo-sensitive device being effective to provide an electrical output proportional to the light energy received thereby, means defining said opening to have a varying width along the length thereof, said defining means being adjustably positionable on said housing, with respect to the width of said opening.

3,849,005

METHOD AND DEVICE FOR ESTIMATING A GASEOUS COMPONENT

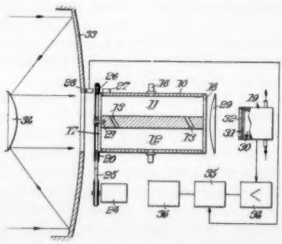
Andre Girard, Chatenay-Malabry, and Jean Laurent, Palaiseau, both of France, assignors to Office National D'Etudes et de Recherches Aerospatiales (ONERA), Chatillon-Sous-Bagneux, France

Filed Apr. 13, 1973, Ser. No. 350,975

Claims priority, application France, Apr. 21, 1972, 72.14150

Int. Cl. G01n *21/22, 21/34*

U.S. Cl. 356—201 **11 Claims**



1. Method for determining a component of interest of a gaseous mixture, said method using the absorption or the

emission of a characteristic radiation of said component and comprising

alternately and cyclically

passing a beam of radiation emerging from said mixture and whose spectral composition contains at least one characteristic ray of the component through an enclosure through which the beam encounters a predetermined weight of the component of interest

and splitting said beam and simultaneously passing part of said beam through a second enclosure where the beam encounters a weight of the component of interest greater than said predetermined weight and the remainder of said beam through a weight of said component substantially less than said predetermined weight,

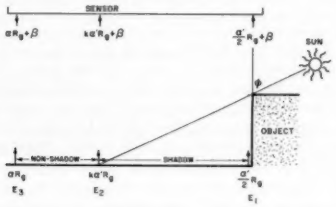
and measuring the cyclical variations in the beam which alternately is passed through said first enclosure and is passed partly through said second enclosure and partly through said lesser weight of component.

3,849,006

METHOD FOR EXTRACTING PHOTOMETRIC INFORMATION FROM AERIAL PHOTOGRAPHIC IMAGERY

Kenneth Robert Piech, Williamsville, and John Elwyn Walker, Buffalo, both of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Filed June 4, 1973, Ser. No. 366,913
Int. Cl. G01n *21/48*
U.S. Cl. 356—209 **4 Claims**



1. A method for extracting photometric information from aerial photographic imagery including the steps of:

choosing at least two shadows over different reflectances in the input photographic scene;

determining the shadow and non-shadow radiances for each shadow chosen;

calculating β and α/α', where α is proportional to atmospheric transmittance and total (sunlight + skylight) irradiance; α' is proportional to atmospheric transmittance and skylight irradiance; where β is proportional to the amount of air light in the scene, and to the amount of camera flare light;

choosing a standard object in non-shadow in the input photographic scene;

determining the radiance of the standard object;

calculating α and α', whereby the parameters for calibrating an image photometrically and for correcting for sensor non-linearity are obtained.

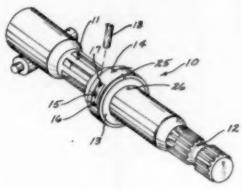
3,849,007

DIRECTION INDICATOR FOR COUPLING

Florian B. Recker, Hopkinton, Iowa 52237

Filed Nov. 3, 1972, Ser. No. 303,337
Int. Cl. F16l *55/00*
U.S. Cl. 403—27 **3 Claims**

1. In a locking collar of the type used to connect a first rotatable shaft to a second rotatable means, the locking collar being releasable upon rotation in one direction only relative to said first rotatable shaft, the improvement comprising a groove disposed in the outer periphery of the locking collar with the bottom thereof tapering on one end thereof from a point on the periphery of the collar to a point radially inwardly from the outer periphery at the other end of the groove, said other end of the groove having an end wall which extends substantially radially outwardly from a point near the bottom



of the groove to the outer periphery of the locking collar; and means for guiding a punch against said end wall in one direction comprising two sidewalls on said groove extending from the periphery of the locking collar to a distance generally inwardly from the periphery of the locking collar for guiding a punch squarely against said end wall.

3,849,008

SADDLE SUPPORT SYSTEM

Raymond W. Boucher, Dothan, Ala.; Robert Boudreau, Bedford, Pa., and John A. Conti, Dothan, Ala., assignors to Hedstrom Co., Bedford, Pa.

Filed Oct. 9, 1973, Ser. No. 404,150
Int. Cl. F16b *7/10*
U.S. Cl. 403—104 **7 Claims**

1. A saddle support system comprising a cage with an opening into its interior, a nut aligned inside the cage so that its threaded opening is adjacent to the opening in the cage, a bolt passing through the opening in the cage and threading into the nut, a tubular saddle pillar, a saddle post fiting coaxially within the saddle pillar, an opening in the wall of the pillar and wherein the cage is secured to the saddle pillar and the bolt is of sufficient length to thread through the nut, pass through the pillar opening and engage the saddle post, thereby frictionally securing the post at a selected level in the saddle pillar.

3,849,009

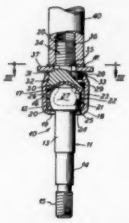
BALL AND SOCKET JOINT FOR RACK AND PINION STEERING GEAR

Julien Louis Bourdon, Suresnes, France, assignor to Gemmer France, Suresnes, France

Filed Mar. 9, 1973, Ser. No. 339,567
Claims priority, application France, Mar. 28, 1972, 72.10831
Int. Cl. B25q *3/38;* **F16b** *7/00;* **F16c** *11/06*
U.S. Cl. 403—133 **15 Claims**

1. A joint comprising a stud having a head and a shank extending from the head, a plastics bearing enveloping said

head, a metal tube surrounding said bearing, said tube having an inturned end bottoming the bearing and defining an aperture freely receiving the stud shank therethrough, a closure plug in said tube overlying the bearing, said tube and plug cooperating to provide a housing enveloping said bearing, a



reduced diameter crimped portion on the tube holding the plug against the bearing and pre-loading the bearing on the stud head, and threaded means on the housing projecting beyond the closure plug to connect the joint to a rod member or the like.

3,849,010

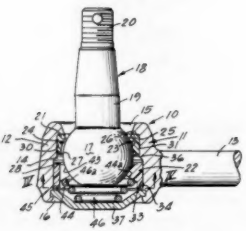
DUAL SEAT SOCKET JOINT

Edward J. Herbenar, Detroit, Mich., assignor to TRW Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 274,870, July 25, 1972, abandoned, and a continuation of Ser. No. 408,152, Oct. 19, 1973,. This application May 2, 1973, Ser. No. 356,633

Int. Cl. F16c *11/06*

U.S. Cl. 403—138 **10 Claims**



1. A ball and socket joint adapted for automotive steering linkages and wheel suspensions which comprises a ball ended stud, a housing receiving the ball end of the stud, a load carrying bearing in the housing receiving a portion of the ball end of the stud in tiltable and rotatable relation, a split wear take-up bearing in the housing spaced from the load carrying bearing receiving a portion of the ball end of the stud projecting from the load carrying bearing, a coil spring compressed in the housing urging the wear take-up bearing toward the load carrying bearing, and said wear take-up bearing having a tapered end wall converging toward the ball end of the stud receiving the end coil of the spring thereagainst to convert a portion of the axial load of the spring on the wear take-up bearing into a radial expansion force wedging the wear take-up bearing in the housing.

3,849,011

DEVICE FOR LIMITING THE AXIAL PLAY OF A ROTATABLE ELEMENT OF A MOVEMENT OF TIMEPIECE OR OF A SMALL MECHANICAL APPARATUS

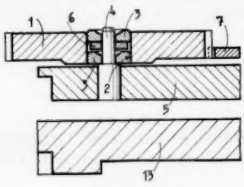
Francois Berthoud, Le Lieu, Switzerland, assignor to Ebauches S.A., Canton of Neuchatel, Switzerland

Filed Apr. 24, 1973, Ser. No. 354,074

Claims priority, application Switzerland, Apr. 26, 1972, 6243/72

Int. Cl. F16d *1/06*

U.S. Cl. 403—165 **12 Claims**



1. In a movement of a timepiece or like small mechanical apparatus, in which there is a rotatable element and a frame stationary relative thereto one of said element and frame having a shaft rigidly secured thereto, the invention comprising means limiting the axial play of the rotatable element relative to the frame comprising a ring tightly engaged on the said shaft, at least a pair of annular bearing members seated spaced apart within said other of said element and frame, said bearing members having coaxial bores receiving said shaft journalled for rotation therein, said ring being disposed between said bearing members, facing surfaces thereof defining alternately abutting surfaces to said ring, the maximum play of said rotatable element being defined by the difference between the axial spacing of said bearing members and the thickness of said ring.

3,849,012

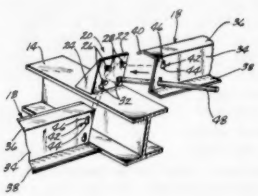
BUILDING STRUCTURE FASTENER

Theodore L. Krouse, 113 W. South St., Monticello, Iowa 52310

Filed Oct. 24, 1973, Ser. No. 409,286

Int. Cl. F16b *9/02*

U.S. Cl. 403—188 **7 Claims**



1. A building structure comprising,

a support member,

a mounting plate on said support member and having a post with a head on its outer end, and a locking tab on said mounting plate adjacent said post and adapted to be resiliently deflected towards said plate and said head having a larger cross sectional area than said post, and

a structural member having an enlarged opening and a slot extending from said opening such that said head on said post may be positioned through s said opening and upon said structural member being moved said post moves into said slot having a size smaller than said head thereby

limiting said head against passing through it and said locking tab being resiliently depressed as said structural member is moved until it drops into said opening and engages the edge thereof to limit movement of said structural member, said post engaging the end of said slot and the locking tab engaging said enlarged opening with said post head being over said slot.

3,849,013

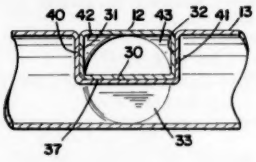
FRAME JOINT CONSTRUCTION

Everett I. Bibb, 24225 San Pedro Ln., Carmel, Calif. 93921

Division of Ser. No. 94,398, Dec. 2, 1970, Pat. No. 3,749,594. This application Mar. 9, 1973, Ser. No. 339,698

Int. Cl. F16b *7/00*

U.S. Cl. 403—347 **3 Claims**



1. A metallic joint consisting of a first tube having a notch therein defined by a solid substantially rectangular seat extending substantially diametrically of said tube and upstanding solid end walls of substantially semicircular contour and each extending from the periphery of said tube to said seat, the portion of said tube below said notch being shaped to provide shoulders consisting of semi-circular solid vertical walls substantially tangential to the outer wall of the tube and having lower edges interconnected with the outer wall of the tube by solid walls of arcuate cross section which extend horizontally to said outer wall of the tube, and a second tube having a notch therein in confronting relation to the notch of said first tube and defined by a solid substantially rectangular seat extending substantially diametrically of the second tube and overlying the seat of the first tube, and depending solid end walls of substantially semi-circular contour and each extending from the periphery of said second tube to said seat, said last-named end walls lying substantially in contiguity with the shoulders of the first tube and being substantially coextensive in area with the areas of said shoulders, the portion of said second tube above the notch thereof being shaped to provide shoulders consisting of semi-circular solid vertical walls substantially tangential to the outer wall of the second tube and having upper edges interconnected with said last-named outer wall by solid walls of arcuate cross section which extend horizontally to the outer wall of the second tube, said last-named shoulders lying substantially in contiguity with the end walls of the notch in said first-named tube, said tubes being bonded to each other in the area of said joint.

3,849,014

EXPANDABLE HUB LOCKING ASSEMBLY

Joel W. Maxey, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1972, Ser. No. 312,412

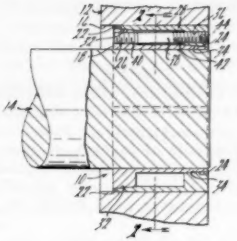
Int. Cl. F16b *2/04*

U.S. Cl. 403—370 **8 Claims**

1. An expandable hub constructed to secure a first member having an external cylindrical surface,

said expandable hub comprising inner and outer hub parts, said hub parts having cooperating frustoconical surfaces, means constructed to produce relative axial displacement between said inner and outer hub parts and concomitant radial contraction and expansion of said parts, respectively,

said means including a threaded member threadedly engaging both said inner and outer hub parts,



said threaded member being rotatable to produce axial displacement of said inner hub part relative to said outer hub part.

3,849,015

SYMMETRICAL HUB-TO-SHAFT CONNECTION

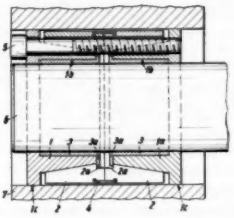
Oskar E. Peter, Schlosstrasse 9/1, 7129 Brackenheim, and Lothar Peter, Guglingen, both of Germany, assignors to Oskar E. Peter, Brackenheim, Germany

Filed Sept. 17, 1973, Ser. No. 398,198

Claims priority, application Germany, Oct. 24, 1972, 22521206

Int. Cl. F16d *1/06*

U.S. Cl. 403—370 **5 Claims**



1. In a symmetrical hub-to-shaft clamping connection, to secure a hub (**7**) on a shaft (**6**),

a pair of inner clamping rings (**1**, **1***a*) having outer, oppositely directed conical surfaces;

a pair of outer clamping rings (**2**, **2**) having inner oppositely directed, matching conical surfaces, and outer cylindrical surfaces for clamping the rings to the hub;

axial bores penetrating through said clamping rings, and clamping bolts (**5**) threaded in the bores to axially clamp the inner and outer rings against each other and engage said conical surfaces;

wherein the improvement comprises

a cylindrical relieved surface (**1***b*) formed on the inner surface of the clamping rings (**1**, **1***a*);

a ring-shaped cutout (**2***a*) formed in the facing surface of the outer clamping rings (**2**);

sleeve members (**3**) seated in cylindrical relieved surfaces (**1***b*) and made of a material which is soft with respect to the shaft, or the clamping rings, respectively, to prevent scoring in case of slippage of the shaft with respect to the rings, said sleeve members being secured in the inner clamping ring by means of an interference fit, and being formed with outwardly directed flanges (**3***a*) fitting radially around the inner end surfaces of the inner rings (**1**, **1***a*) and into said ring-shaped cutout (**2***a*) of the outer rings (**2**);

an axially slit ring (4) of U-shaped cross section engaging the outer clamping rings (2) adjacent the facing surfaces to secure the rings into a single assembly;

and terminal flanges (1c) formed adjacent the outer end faces of the rings (1, 1a).

3,849,016

DEVICE FOR INTRODUCING RODS, DOWELS OR THE LIKE INTO CONCRETE PAVED CARRIAGEWAYS

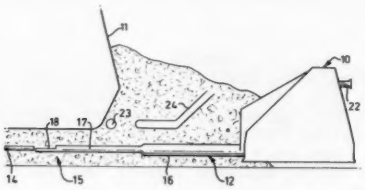
Kenneth Alfred Cochrane, Matlock, and Robert Geofrey Holloway, Chesterfield, both of England, assignors to Robert McGregor & Sons Limited, Derbyshire, England

Filed Nov. 13, 1972, Ser. No. 305,897

Claims priority, application Great Britain, Dec. 23, 1971, 59854/71

Int. Cl. E01c *11/18*

U.S. Cl. 404—100 **11 Claims**



1. A device for introducing rods, dowels or the like into concrete paved carriageways, such device comprising a holder positioned in front of the conforming plate of a concrete paving machine, magazine means providing a supply of rods or dowels within said holder, a guide tube connected to the holder, in position to longitudinally receive rods or dowels from said magazine means, and means for extracting rods or dowels from said magazine in the holder and moving them endwise into and through said guide tube for positioning in the wet concrete.

3,849,017

TANDEM WHEEL SUPPORTS

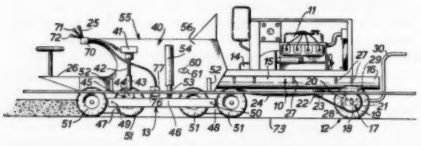
William Phillip King Rochfort, Brisbane, Australia, assignor to Kerbit PTY.LTD., Queensland, Australia

Division of Ser. No. 101,405, Dec. 24, 1970, abandoned, which is a continuation of Ser. No. 780,432, Dec. 2, 1968, abandoned. This application Oct. 11, 1972, Ser. No. 296,589

Claims priority, application Australia, Nov. 18, 1966, 14148/66; Jan. 26, 1968, 32660/68

Int. Cl. E01c *19/20*

U.S. Cl. 404—108 **10 Claims**



1. A concrete laying machine comprising:

a. a mobile main frame having a front ground wheel assembly adapted for steering the machine;

b. a hopper on said main frame for holding a supply of concrete mix and having an open bottom providing an outlet through which the concrete mix is discharged;

c. an open bottom, downwardly facing mold extending rearwardly from the outlet of said hopper for receiving concrete mix discharged therefrom and shape the laid concrete to a desired cross-sectional shape;

d. feed means within the hopper for feeding the concrete mix through the hopper outlet into the mold; and

e. a pair of rear ground-engaging wheel assemblies mounted on said frame independent of one another and located respectively on opposite sides of the hopper, each of said rear ground-engaging wheel assemblies comprising two pairs of wheels disposed in tandem with each pair of tandem wheels independently pivotally connected to opposite ends of a major frame member, said major frame being pivotally connected to the main frame of said machine at a position between said pair of tandem wheels for free pivotal movement thereof.

3,849,018

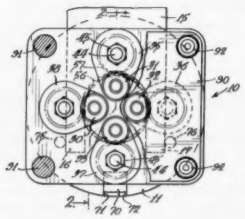
MULTIPLE SPINDLE HEAD

Richard A. Anderson, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 31, 1973, Ser. No. 328,323

Int. Cl. B23b *39/16*

U.S. Cl. 408—46 **2 Claims**



1. A multiple spindle head for use in numerical control machining centers comprising, an interlocked two-part body, one of said body parts rotatably mounting a plurality of spindles, a mounting stem rotatably mounted in said body and extending from the other body part for insertion into the spindle of said machining center, means within said body for transmitting rotation of the mounting stem to said plurality of spindles, locator means on the other body part engageable with the spindle head of the machining center to orient said body and hold said body against rotation, means for rotatably adjusting said body parts relative to each other about an axis lengthwise of said body to vary the orientation of the plurality of spindles to said locator means, said plurality of spindles being adjustably mounted on said one body part to vary their orientation one to the other, a template for locating each of said plurality of spindles in a selected position, and mounting posts for said template extending outwardly from said other body part.

3,849,019

APPARATUS FOR CUTTING HOLES IN PORCELAINIZED METAL

Max L. Green, Pasadena, Calif., assignor to Relton Corporation, Arcadia, Calif.

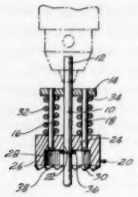
Filed Mar. 12, 1973, Ser. No. 340,333

Int. Cl. B23b *51/04*

U.S. Cl. 408—142 **6 Claims**

1. A tool for cutting holes in porcelain coated metal with a rotary drill, comprising a guide shaft adapted to be held at one end in the chuck of the drill, the other end of the guide shaft being adapted to extend through a pilot hole in the metal, a cutter head slidably engaging the shaft, slidable means locking the head to the shaft for rotating the head from the shaft while permitting the head to move freely lengthwise of the shaft, spring means connected between the shaft and the head, the spring means urging the head toward the pilot hole engaging

end of the shaft, the head having an annular flange coaxial with the shaft and projecting toward the pilot hole end of the



shaft, and a plurality of cutting teeth on the end of the flange, the teeth projecting in a direction parallel to the axis of rotation of the shaft.

3,849,020

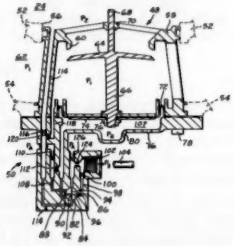
FLUIDIC COMPRESSOR AIR BLEED VALVE CONTROL APPARATUS

James M. Eastman, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Sept. 13, 1973, Ser. No. 396,905

Int. Cl. F01b *25/00*

U.S. Cl. 415—28 **10 Claims**



1. Gas turbine engine air compressor bleed valve apparatus comprising:

valve means operatively connected to said air compressor for venting compressor pressurized air from a compressor stage intermediate the compressor inlet and outlet to a relatively lower pressure air source;

first pressure responsive means responsive to the pressure differential between said compressor pressurized air and said relatively lower pressure air operatively connected to said valve means for actuating the same in an opening direction;

second pressure responsive means responsive to the pressure differential between a control air pressure and said relatively lower air pressure operatively connected to said valve means for actuating the same in a closing direction;

a first passage having first and second series flow restrictions communicating compressor discharge air with a relatively lower pressure air source;

a second passage having third and fourth series flow restrictions communicating compressor pressurized air from said intermediate stage to compressor inlet air;

fluid pressure differential responsive control means responsive to the pressure differential between a first fluid pressure generated between said first and second flow restrictions which varies as a predetermined function of compressor pressure ratio and thus compressor corrected rotational speed and a second fluid pressure generated between said third and fourth flow restrictions said control means adapted to control said control air pressure in proportion to said fluid pressure differential derived from said first and second fluid pressures;

said valve means being actuated to a fully open position in response to said control air pressure at compressor corrected rotational speeds below a predetermined valve and progressively actuated to a fully closed position over a predetermined range of compressor corrected rotational speeds during an engine acceleration.

3,849,021

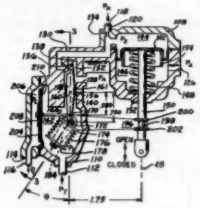
COMPRESSOR GEOMETRY CONTROL APPARATUS FOR GAS TURBINE ENGINE

James M. Eastman, and Robert W. Schuster, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Apr. 2, 1973, Ser. No. 347,251

Int. Cl. F02c *9/14*; **F01d** *17/06, 19/00*

U.S. Cl. 415—30 **12 Claims**



1. Control apparatus for a gas turbine engine having a variable geometry air compressor comprising:

a fluid pressure responsive output member operatively connected to said air compressor for varying the geometry thereof;

valve means for controlling the fluid pressure to which said pressure responsive member responds;

control means responsive to first and second air pressures at least one of which varies in a predetermined manner in response to engine speed, said control means having a lever member operatively connected to said valve means for actuating the same in proportion to the ratio of said first and second air pressures over a predetermined range of engine speeds during an acceleration of the engine to a selected speed;

said control means having a first air pressure responsive member operatively connected to said lever member and responsive to said first and second air pressures, and a second air pressure responsive member operatively connected to said lever member and responsive to said second air pressure for loading said lever member in opposition to said first air pressure responsive member; and

means operatively connecting said fluid pressure responsive output member and said second air pressure responsive member for positioning said second air pressure responsive member in response to movement of said output member to vary the effective force component of said second air pressure responsive member opposing said first air pressure responsive member.

3,849,022

TURBINE BLADE COOLANT DISTRIBUTOR

Charles A. Amann, Bloomfield Hills, and James M. Ricketts, Oxford, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

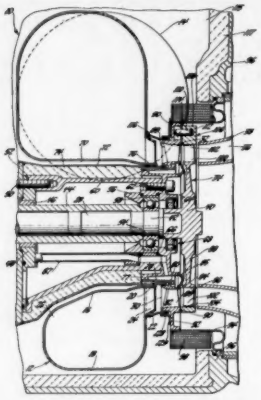
Filed July 12, 1973, Ser. No. 378,648

Int. Cl. F02c *7/12, 7/20*; **F01d** *5/00*

U.S. Cl. 415—116 **4 Claims**

1. In a gas turbine engine having a gas generator including a turbine nozzle having an outer shroud and an inner shroud

with a row of vanes connected therebetween for directing gas flow through turbine blades on a rotor wherein the gas flow is confined at the outer diameter of the rotor by a fixed rotor shroud ring connected to the outer shroud of the nozzle for free radial expansion with respect thereto the improvement comprising: means defining an air chamber, means for directing cooling air into said chamber, a nozzle box located in said air chamber having an inlet adapted to be connected to a combustion chamber outlet and having inner and outer walls thereof forming an annular outlet located coaxially of the inlet of the turbine nozzle, said annular outlet including a continuous ring thereon located axially forwardly of said outlet and



having an extension thereon directed axially rearwardly of said outlet and located radially outwardly of the outer shroud of the turbine nozzle to define an annular slot directed axially of said outlet to a point adjacent the front edge of the outer shroud at the inner surface thereof, a plurality of circumferentially spaced openings in said ring in communication with said air chamber located axially forwardly of said outlet, said outer wall of said annular outlet overlying said openings to direct flow from said chamber through said slot to direct cooling air across the inner surface of said outer shroud for cooling the radial outermost tips of turbine blades and the exposed surface of the rotor shroud ring to maintain a predetermined clearance therebetween.

3,849,023

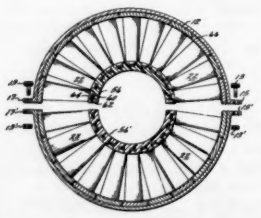
STATOR ASSEMBLY

Nicholas Klompas, Lynnfield, Mass., assignor to General Electric Company, Lynn, Mass.

Filed June 28, 1973, Ser. No. 374,518

Int. Cl. F04d *29/08*

U.S. Cl. 415—170 **9 Claims**



1. A stator assembly comprising:

an outer casing longitudinally split into at least two sectors and having a dovetail groove around the inside surface thereof;

an inner segmented shroud longitudinally split into at least two sectors, each of which has a plurality of circumferentially spaced apart pockets in the outer surface thereof wherein each pocket is undercut at one end, and

a plurality of stator vanes extending radially between the shroud and casing with each vane having:

an inner root portion which includes an integral heel portion and an integrally extending toe portion for engaging the undercut end of a respective shroud pocket, and an outer platform from which extend forward and aft tangs which engage the dovetail groove.

3,849,024

VORTEX BLOWER

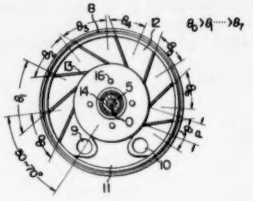
Tadahisa Masai, Hitachi, and Takeshi Atago, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 1, 1973, Ser. No. 366,145

Claims priority, application Japan, June 21, 1972, 47-61335

Int. Cl. F04d *5/00, 11/00*

U.S. Cl. 415—213 **10 Claims**



1. A vortex blower comprising a rotor unit provided with a plurality of vanes arranged at fixed intervals in an annular groove, half circular in sectional shape, formed in said rotor unit, and a stator unit also formed with a similar annular groove half circular in sectional shape and designed to serve as an air chamber, the last-said groove being provided at suitable locations thereof with an inlet opening, an outlet opening and a land portion separating said both openings, said both units being arranged in opposed relation and suitably spaced-apart relative to each other, wherein by rotating said rotor a vortex flow is produced in the grooves in said rotor and stator units and is discharged out from said outlet opening, and further characterized in that a plurality of partitioning vanes are provided in the air chamber formed in said stator unit, wherein said partitioning vanes are arranged such that the intersection betwen said vanes and the inner edge of said air chamber will be located further forward in the direction of advancement of the fluid than the corresponding intersection of the straight line connecting the center of said air chamber with the intersection between said vanes and the outer edge of said air chamber.

3,849,025

SERPENTINE COOLING CHANNEL CONSTRUCTION FOR OPEN-CIRCUIT LIQUID COOLED TURBINE BUCKETS

Clayton M. Grondahl, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

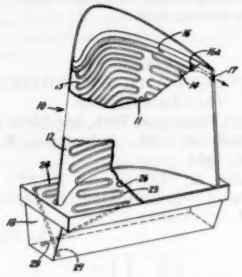
Filed Mar. 28, 1973, Ser. No. 345,538

Int. Cl. F01d *5/18*

U.S. Cl. 416—97 **11 Claims**

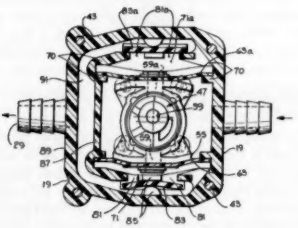
1. In a vane structure adapted for mounting in a rotating element of a machine wherein the airfoil surfaces of the vane are subjected to contact with hot gas, the vane comprising an airfoil-shaped core and a conforming skin affixed thereto, said core and said skin defining at least one open-ended subsurface passage therebetween for the transit of coolant therethrough, said at least one passage being adapted to receive coolant flow

at the radially inner end thereof from a source of coolant and to discharge the coolant flow from the radially outer end thereof into a chordwise-extending manifold, said manifold in turn being adapted to discharge coolant flow from said vane, the improvement in which a plurality of subsurface passages



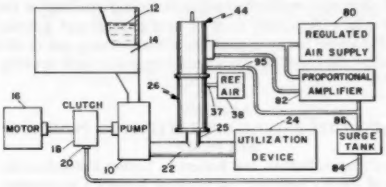
are employed, each passage being arranged in a serpentine pattern confined to one face of the vane and having a substantially constant depth along the length thereof, most of each successive convolution of said serpentine pattern extending in the generally chordwise direction.

3,849,026
PUMP
Ezra D. Hartley, 2700 Jalmia Dr., Los Angeles, Calif. 90046
Filed Sept. 27, 1972, Ser. No. 292,528
Int. Cl. F04b *1/00*
U.S. Cl. 417—203 **6 Claims**



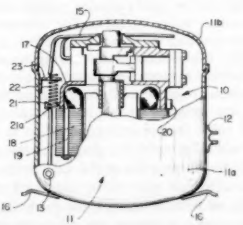
1. A pump comprising:
a housing;
means for defining a variable volume chamber in said housing, said variable volume chamber including a movable wall for varying the volume of said chamber, said chamber having an inlet through which fluid can flow into the chamber and an outlet through which fluid can be expelled from the chamber;
said movable wall including a flexible diaphragm;
an eccentric;
means for mounting said eccentric for rotation in said housing;
a shuttle block substantially circumscribing said eccentric and being driven thereby as the eccentric rotates;
said shuttle block having a driven surface which confronts said eccentric and which is constructed and arranged to allow said eccentric to drive said shuttle block along a path which forms a loop;
means for interconnecting said diaphragm and said shuttle block whereby at least a portion of the diaphragm is moved by said shuttle block;
said diaphragm having means to accommodate the loop-like motion of the shuttle block without damaging the diaphragm;
first valve means for controlling fluid flow through said inlet; and
second valve means for controlling fluid flow through said outlet whereby said variable volume chamber can take in fluid through said inlet and discharge the fluid under pressure through said outlet.

3,849,027
FLUIDIC CONSTANT PRESSURE PUMP CONTROL
Frederick H. Blake, 5712 Rutgers, La Jolla, Calif. 92037
Filed Aug. 1, 1973, Ser. No. 384,740
Int. Cl. F04b *49/00*
U.S. Cl. 417—223 **8 Claims**



1. A control system for producing a constant pressure output of pumped product from a pump in an intermittent demand cycle comprising:
an accumulator piston-cylinder having a piston with a reference side and a regulating side,
said regulating side being in fluid communication with the output of said pump,
said reference side being maintained at a reference pressure to transmit said reference pressure to the pumped product from said pump,
fluidic means comprising a sensor positioned to detect the movement of a piston controlled element operatively associated with said accumulator piston-cylinder for producing change in the quantity of a control air-flow pressure in response to said piston moving beyond predetermined operating limits, and
speed control means in fluid communication with said control air flow pressure for producing proportional change in the input speed of said air pump in response to changes in said control air flow pressure.

3,849,028
STRUCTURE FOR SUPPORTING A MOTOR-COMPRESSOR UNIT IN A HOUSING
Yuko Kurita; Yasuhiro Kawanishi; Katsuji Yoshikawa, and Kiyoshi, Tanaka, all of Oaza, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi City and Tokyo Sanyo Electric Co., Ltd., Oraguun Gumma Pref., both of, Japan
Filed Oct. 16, 1972, Ser. No. 297,600
Int. Cl. F04b *17/00;* **F16f** *15/00*
U.S. Cl. 417—363 **2 Claims**



1. A mechanical refrigeration system including a motor-compressor unit having a crankcase mounted thereon, a hous-

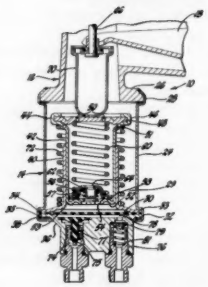
ing adapted for receiving therein said motor-compressor unit, a plurality of brackets secured on the interior of the housing in suitable spaced relation to one another, openings of a number corresponding to that of said brackets and formed at the base of said crankcase of said motor-compressor unit in correspondingly spaced relation to one another and coil springs of the number corresponding to that of said brackets, wherein the improvement comprises that the upper end portion of said each coil spring is wedged into an arm portion of the corresponding bracket, with the lower end portion of each coil spring being engaged with the corresponding opening whereby said motor-compressor unit is yieldably suspended in said housing, wherein each of said coil springs has a radially outwardly extending end extremity adjacent to said other end of said coil spring and further comprising engagement notches one for each opening formed adjacent to said openings at the base of said crank case, each of said engagement notches adapted to retain firmly in place the corresponding one of said coil springs after the latter has been engaged in said opening.

3,849,029

COMBINATION ENGINE OPERATED FUEL PUMP AND AIR PUMP

John E. Creager, Fenton, and Robert G. Taylor, Columbiaville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 4, 1972, Ser. No. 311,464
Int. Cl. F04b *35/02*
U.S. Cl. 417—388 **3 Claims**



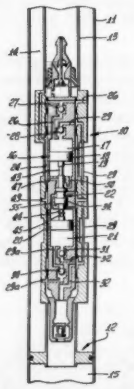
1. In a combination air compressor and fuel pump assembly of the type having a common rocker arm for driving the fuel pump and air compressor the improvement comprising: an oil filled housing adapted to be secured to the fuel pump body; a diaphragm secured within a flanged portion on said housing by a cylinder, a valve housing, a gasket, and a flanged portion on said body crimped below the valve housing and gasket; a hollow piston having top and bottom perforated end plates slidably positioned within said cylinder with said top perforated end plate being unobstructed to allow oil from the oil filled housing to enter and discharge through the perforations into and out of said piston; said cylinder, piston and the upper side of said diaphragm define an oil cavity; whereas the lower side of said diaphragm and valve housing define an air cavity; a relief valve within said hollow piston spring biased against a seat on said perforated bottom end plate to close the perforations in said end plate to prevent oil from discharging from the oil cavity during the pumping stroke; an inlet valve positioned within said relief valve that is spring biased so as to close an inlet opening in said relief valve to, along with the relief valve, prevent oil from discharging from the oil cavity during the pumping stroke and which inlet valve allows oil to enter the oil cavity from the oil filled housing through the inlet opening during the intake stroke to empty the oil cavity and thereby allow the air cavity to be filled, said valve housing having air intake and discharge valves therein to take in air through the air intake valve during the suction stroke through the discharge valve and discharge air out of the lower cavity during the pump stroke; drive means secured to a rocker arm which drive means is in contact with the top perforated piston end plate to slidably move said piston into said cylinder during the pump stroke, and spring means surrounding said cylinder which is in contact with the underside of the upper portion of said piston which spring means moves said piston out of said cylinder during the suction stroke.

3,849,030

FLUID OPERATED PUMP WITH OPPOSED PISTONS AND VALVE IN MIDDLE

Ralph F. McArthur, Huntington Park, and Melle F. Geurts, Los Angeles, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed Mar. 22, 1973, Ser. No. 343,877
Int. Cl. F04 *17/00;* **F04b** *35/00;* **F11** *25/02*
U.S. Cl. 417—393 **3 Claims**



1. In a fluid operated pump, the combination of:

an elongated pump assembly having a main body including an upper pumping cylinder having an upper pump piston therein and a lower pumping cylinder below said upper cylinder and having a lower pump piston therein, said pistons being rigidly connected together by a piston rod therebetween, said pump having power fluid inlet passage means adapted to be connected to a source of power oil under high pressure, having well fluid inlet passage means adapted to be connected to a source of well fluid at substantially lower pressure, and having discharge passage means adapted to receive fluid pumped by the pump and discharge it into a conduit leading to the surface of the ground, the fluid pressure in said discharge passage means being intermediate between the fluid pressures in said power fluid inlet passage and said well fluid inlet passage; and

valve means in said pump adapted to connect said power fluid inlet passage means to the lower end of said upper cylinder below said upper piston, said well fluid inlet passage means to the lower end of said lower cylinder below said lower piston, and said discharge passage means to the upper ends of said cylinders above the pistons therein to cause an upstroke of the pump, and alternatively adapted to connect said power fluid inlet passage means to the upper end of said lower cylinder above the piston therein, said well fluid inlet passage means to the upper end of said upper cylinder above said piston therein, and said discharge passage means to the lower ends of said cylinders below the pistons therein to cause a downstroke of the pump, said valve means on the upstroke of the pump connecting said discharge passage means to the lower end of said upper cylinder before it

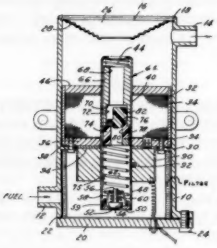
connects said power fluid inlet passage means to the upper end of said lower cylinder, said valve means on the downstroke of the pump connecting said discharge passage means to the upper end of said lower cylinder before it connects said power fluid inlet passage means to the lower end of said upper cylinder, said valve means including a tubular valve sleeve encircling said piston rod and longitudinally movable relative to the main body of said pump in response to differential fluid pressures applied thereto.

3,849,031

ELECTRONICALLY CONTROLLED LIQUID FUEL PUMP

Benny J. Charboneau, and Alton J. O'Connor, both of Cass City, Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed May 4, 1973, Ser. No. 357,367
Int. Cl. F04b *17/04*
U.S. Cl. 417—417 **7 Claims**



1. In an electronically controlled pump of the type having a pump casing provided with a fuel inlet adjacent one end thereof and a fuel outlet adjacent the other end thereof, a solenoid winding, a pump tube centrally of said solenoid winding with one end thereof in fluid communication with said fuel inlet and the other end thereof in fluid communication with said fuel outlet, an armature assembly mounted for axial movement in said tube, bias means yieldably biasing said armature assembly, valves in said tube and said armature assembly, and a control circuit including a reed switch for actuating said solenoid winding, that improvement which comprises said reed switch being mounted adjacent said tube and spaced generally axially from said solenoid winding in fixed relation to said casing, and a permanently magnetized element fixedly carried by said armature assembly for movement therewith to influence said reed switch to change states to de-energize said solenoid winding when said armature has been axially moved with respect to said tube against the bias of said biasing means by energization of said solenoid winding.

3,849,032

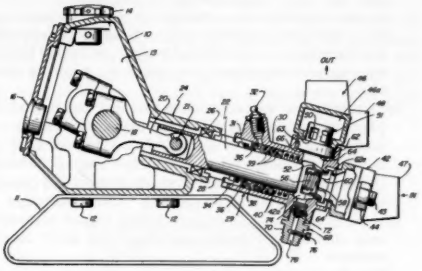
HIGH PRESSURE RECIPROCATING PUMP

Philip A. Mulvey, Elmhurst, and Kenneth G. Porter, Mt. Prospect, both of Ill., assignors to Perfect Pump Co., Melrose Park, Ill.

Filed July 2, 1973, Ser. No. 375,605
Int. Cl. F04b *39/14*; **F01b** *31/10*; **F16k** *25/00*
U.S. Cl. 417—454 **11 Claims**

1. In a high pressure pump having a plunger movable in a cylinder by a rotatable crankshaft to urge fluid through an entry into a suction chamber of the pump, and then urge the fluid under pressure through a discharge chamber and out of said pump, the improvement which comprises

an interchangeable valve assembly mounted in said suction and discharge chambers, said valve assemblies being reversed relative to each other so that such suction chamber valve assembly is opened and said discharge chamber valve assembly is closed during a suction stroke of the plunger, and said opening and closing of the valve assemblies is reversed during the pressure stroke of the plunger, each valve assembly including a continuous flange mounted interiorly in an annular groove in an elastomeric seal ring and extending beyond one side of said elastomeric ring,



a rigid anchoring ring having a continuous flange mounted interiorly in said annular groove in said elastomeric seal ring and extending beyond the opposite side of said elastomeric seal ring, and

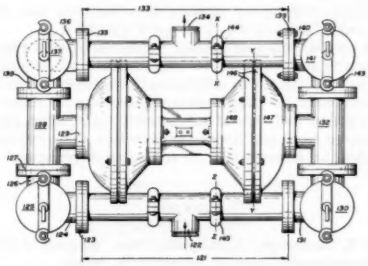
a matching continuous grooved seat in each of said chambers wherein said anchoring ring is positioned.

3,849,033

AIR PRESSURE-ACTUATED DOUBLE-ACTING DIAPHRAGM PUMP

Robert A. Schall, Stamford, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Division of Ser. No. 365,936, June 1, 1973, , which is a continuation of Ser. No. 161,465, July 12, 1971, abandoned. This application Mar. 29, 1974, Ser. No. 456,110
Int. Cl. F04b *21/06*
U.S. Cl. 417—454 **7 Claims**



1. A double-acting pressure-actuated diaphragm pump having a horizontal pump axis, which comprises

a first pair of housing sections bolted to each other to constitute a first pump housing,

a first pump diaphragm interposed between said housing sections, and dividing the housing into a first pumping chamber having first intake- and discharge connections directed away from one another, and a first actuating chamber having an opening concentric with the diaphragm,

a second pair of housing sections bolted to each other to constitute a second pump housing,

a second pump diaphragm dividing said second pump housing into a second pumping chamber having second intake- and discharge connections directed opposite to each other, similar to said first intake- and discharge connections, and a second actuating chamber having an opening concentric with the diaphragm,

a tubular connecting member rigidly interconnecting said pump housings in axially aligned relationship, and so that said first and second actuating chambers are located adjacent to each other, and that the pump housing assembly is constituted of a pair of inner housing sections defining the respective actuating chambers, and a pair of outer housing sections defining the respective pumping chambers,

an actuating rod interconnecting said first and second diaphragms, coaxial with the pump axis and guided in said connecting member in sealing relationship with each end thereof, providing a double diaphragm assembly whereby the pump delivery stroke of one diaphragm will coincide with the pump intake stroke of the other diaphragm,

said pump consisting of an intermediate section comprising said connecting member and associated inner housing sections,

a first disconnectible subassembly unit comprising the first outer housing section, a first upright intake check valve having a lateral discharge neck connected to said outer housing section, and having a bottom intake neck extending parallel to the pump axis, and towards the opposite end of the pump, and a first upright discharge check valve having a bottom intake neck connected to said outer housing section, and having a lateral discharge neck extending parallel to the pump axis and towards said opposite end of the pump,

a second disconnectible subassembly unit opposite to said first subassembly unit, which comprises the second outer housing section, a second upright intake check valve having a lateral discharge neck connected to said outer housing section, and having a bottom intake neck extending parallel to the pump axis and towards the opposite end of the pump, and a second upright discharge check valve having a bottom intake neck connected to said outer housing section, and a lateral discharge neck extending parallel to the pump axis and towards said opposite end of the pump,

a first intermediate pipe header detachably interconnecting the intake necks of the first and second intake check valves, and having intake means for both said intake valves,

and a second intermediate pipe header detachably interconnecting the discharge necks of the first and second discharge check valves, and having discharge means for both said discharge valves, and track structure for supporting said first and second subassembly units, when disconnected from said intermediate section, and retracted to allow for inspection of the respective diaphragms.

3,849,034

ORBITAL DEVICE

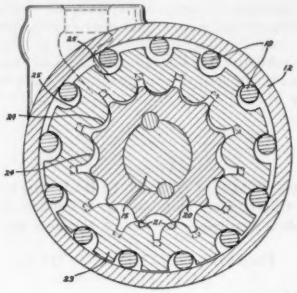
Ralph R. Ohnesorge, Minneapolis, Minn., assignor to Gresen Manufacturing Company, Minneapolis, Minn.

Filed Jan. 12, 1973, Ser. No. 323,059

Int. Cl. F01c *1/02;* **F03c** *3/00;* **F04c** *1/02*

U.S. Cl. 418—61 B **9 Claims**

1. In apparatus of the class above described including a housing comprised of a pair of end elements and a cylindrical center element to form a cylindrical chamber in which a gerotor set including an inner externally toothed element disposed on a shaft extending through the housing and an outer internally toothed orbital element, both disposed for movement within the chamber and valving therefor, the combination comprising; a radially outwardly opening groove disposed radially outwardly of the crest of each of the internal teeth on the outer element of the gerotor set so as to present a substantially uniform radial wall thickness therefor; a like plurality of cylindrical elements extending axially of the chamber, said cylindrical elements being of smaller diameter than



said grooves and being circumferentially equidistant from one another, said cylindrical elements being engaged by said grooves to prevent rotation of said outer orbital element.

3,849,035

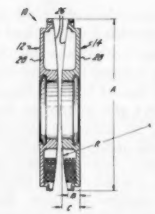
INTERMEDIATE HOUSING SECTION FOR A MULTI-ROTOR ROTARY INTERNAL COMBUSTION ENGINE AND METHOD OF MANUFACTURE THEREOF

Charles Jones, Hillsdale, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed May 11, 1973, Ser. No. 359,248

Int. Cl. B23p *15/00;* **F01c** 21/00, 1/02

U.S. Cl. 418—60 **8 Claims**



1. An intermediate housing section for a multi-rotor rotary mechanism which defines with other housing sections spaced adjacent rotor cavities within which rotors are supported for rotation on a crankshaft, the intermediate housing section comprising:

a. a first housing part having integral inner and outer peripheral portions;

b. a second housing part having integral inner and outer peripheral portions;

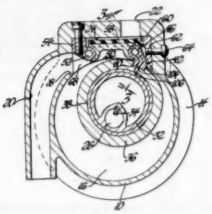
c. said first and second housing parts each having a matching surface portion extending from and forming a part of the inner and outer peripheral portions and an opposite substantially flat surface portion;

d. securing means disposed at the respective outer peripheral portions of the first and second housing parts to clamp said first and second housing parts in abutment along their respective matching surface portions; and

e. each of said matching surface portions having a partial cylindrical configuration such that the maximum extent of the curvature thereof lies substantially in an imaginary plane extending through the axis of the crankshaft and substantially bisecting the region of highest heat flux and so that, upon the housing parts being clamped together, compressive stresses are created in each of said first and second housing parts which act to maintain the matching

surface portions in continuous abutment at their respective integral inner and outer peripheral portions.

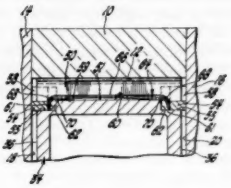
3,849,036
ROTARY COMPRESSOR WITH VALVE MEMBER PIVOTED TO AN ECCENTRIC PISTON
Balfour Read, 625 5th St., Traverse City, Mich. 49684
Filed Oct. 26, 1972, Ser. No. 301,118
Int. Cl. F01c *1/02*; **F04c** *1/02, 17/02*
U.S. Cl. 418—62 **1 Claim**



1. Air compressor means, comprising; a housing member having a chamber space for a rotary piston provided therein and including a fresh air inlet port and a compressed air outlet port provided through the side walls of said housing member in relatively close spaced relation to each other, a drive shaft extended axially through said chamber space and journalled within opposite end walls of said housing member, a rotary piston member provided in said chamber space and including an eccentrically driven member keyed to said shaft and having a relatively free floating cylindrical sleeve member journalled thereon and relatively fitted for rotary piston movement within said chamber space, and valve means mounted in said housing member between said inlet and outlet ports and connected to said sleeve member for actuation thereby, said valve means providing separation between said inlet and outlet ports in the course of rotary piston movement of said sleeve member within said chamber space, said chamber space being cylindrical in form and having a separate valve space provided in open communication apart therefrom and relatively between said inlet and outlet ports, said valve means including a valve member provided essentially wholly within said valve space and having relative sealing engagement with the side walls thereof in the course of actuated movement, means replacably affixed to an end wall of said valve space and therewithin for providing a journal bearing and relative end wall sealing surface for one end of said valve member as engaged thereto, like means replacably affixed to said sleeve member and to extend into said valve space for providing a journal bearing and relative end wall sealing surface for the other end of said valve member as engaged thereto, and a pair of connecting links provided between said journal bearing and relative end wall sealing surface means for retaining said valve member replacable therebetween, and said valve member sealing the space between said journal bearings and including a resilient sealing lip extending therebeyond for engagement with the opposite end wall of said valve space in the opening and closing of said outlet port to said chamber.

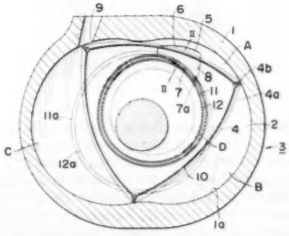
3,849,037
COMBINATION APEX AND CORNER SEAL SPRING FOR ROTARY ENGINE
Thomas C. Downs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 11, 1973, Ser. No. 368,602
Int. Cl. F04c *27/00*
U.S. Cl. 418—121 **3 Claims**

1. In a rotary machine, a housing having an inwardly facing inner peripheral wall and a pair of spaced oppositely facing inner end walls, a rotor rotatably mounted in said housing having sides opposite said end walls and a plurality of corners that remain adjacent said peripheral wall as said rotor rotates, said rotor and said housing walls cooperatively defining a plurality of chambers separated by said rotor corners that expand and contract as said rotor rotates, each said rotor corner having an apex seal groove extending thereacross facing outwardly toward said peripheral wall and also having a corner seal hole in each said rotor side contiguous with said apex seal groove and facing outwardly toward one of said end walls, an apex seal mounted in said apex seal groove for engaging said peripheral wall, a corner seal mounted in each said corner seal hole for engaging the opposite end wall, said apex seal and said apex seal groove having bottoms with an apex



seal spring space therebetween, said corner seals and said corner seal holes having bottoms with corner seal spring spaces therebetween open to said apex seal spring space, a single spring located in said spaces, said spring having two end portions and an intermediate portion of substantially greater length than said end portions with each said portion having a curved shape and with seat portions joining said intermediate portion and said end portions, said intermediate portion arranged in said apex seal spring space with all said seat portions positively seating on said apex seal groove bottom adjacent the ends thereof and engaging said bottom of said apex seal to bias said apex seal outwardly against said peripheral wall and with said end portions extending freely into said corner seal spring spaces and engaging said bottoms of said corner seals to bias said corner seals outwardly against said end walls.

3,849,038
ROTARY PISTON TYPE ENGINE
Noriyuki Kurio, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan
Filed Nov. 21, 1973, Ser. No. 417,940
Int. Cl. F01c *19/08*
U.S. Cl. 418—142 **2 Claims**



1. A rotary piston type engine including a casing which comprises a center housing having a trochoidal inner peripheral wall and a pair of side housings secured to the opposite sides of the center housing, and a rotor having a substantially

triangular outer periphery and disposed in said casing for rotation therein with apices in sliding engagement with the inner peripheral wall of the center housing so that working chambers of variable volume are defined between the inner peripheral wall of the center housing and the rotor, each of said side housings having an inner surface opposing to said rotor and at least one of said side housings being provided with air intake port means opening to the inner surface thereof, said rotor having opposite side surfaces each provided with side seal means disposed substantially along the triangular outer periphery of the rotor, and oil seal means disposed at diametrically inner portion of the rotor, said side and oil seal means being in slidable sealing engagement with the inner surface of the adjacent side housing, the improvement comprising the fact that said oil seal means on the side of the rotor facing to the side housing having said intake port means comprises at least a pair of diametrically spaced oil seal members, one being disposed at such a location that the outer envelope of the traces of the member is radially outside of the radially inner extremity of the intake port means, and the other at such a location that the outer envelope of the traces thereof is radially inside of the radially inner extremity of the intake port means.

3,849,039

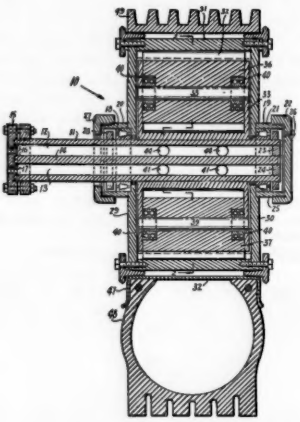
RIM POWER HYDRAULIC MOTOR

Raymond H. Leidig, Rt. 3, Box 504, Lake Charles, La. 70601

Filed Mar. 22, 1972, Ser. No. 237,036

Int. Cl. F01c *1/00*

U.S. Cl. 418—165 **4 Claims**



1. A rim power hydraulic motor comprising a fixed hollow axle having an inlet conduit and an outlet conduit for hydraulic fluid under pressure extending therethrough, a generally cylindrical housing journaled for rotation on said axle, a generally cylindrical body rigidly mounted on said axle completely enclosed in said housing, a generally cylindrical internal spur gear formed on said housing surrounding said body, a pair of spur gears mounted in said body and meshing with the spur gear formed on said housing, and conduits within said body communicating with the conduits in said axle for delivering hydraulic fluid to said spur gears and from said spur gears to said axle for driving said spur gears in said body to drive said housing.

3,849,040

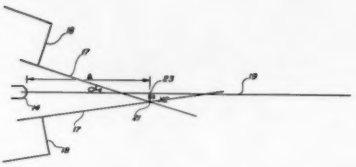
SPINNING APPARATUS WITH CONVERGING GAS STREAMS

Paul H. McGinnis, Kings Mountain; William D. McLaughlin, Jr., and Robert E. Swander, both of Charlotte, all of N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 237,832, March 24, 1972, Pat. No. 3,787,265. This application July 30, 1973, Ser. No. 383,631

Int. Cl. D01d *3/00*; **B29c** *25/00*

U.S. Cl. 425—72 **1 Claim**



1. Apparatus for producing organic thermoplastic filamentary material comprising nozzle means having an extrusion orifice for fiber-forming material and a plurality of substantially rectangular gas outlet passages shaped so as to emit substantially planar gas streams, said gas outlet passages being spaced from said extrusion orifice and separated from said nozzle means by an insulating means, said gas outlet passages being so positioned with respect to the nozzle means such that: 1) the gas passages are closer to the axis of the extrusion orifice at the outlet end of the passage than at an interior zone of the passage so as to direct the gas stream in a convergence angle with the axis of the extrusion orifice of from about 5° to 45°, 2) no two of the planar projections of the gas outlet passages converge and intersect with the axis of the extrusion orifice at the same angle, and 3) planar projections of the gas outlet passages intersect at a point which is at a distance measured perpendicularly from the axis of the extrusion orifice at least equal to the diameter of the extrudate stream at a point along the extrudate stream in juxtaposition to the point of intersection of the planar projections of the gas outlet passages, and means for supplying said gas passages with gas under pressure to be projected from said passages to contact and attenuate the stream of fiber-forming material issuing from said extrusion orifice.

3,849,041

APPARATUS FOR MANUFACTURING ENVIRONMENTAL SEED CELLS

Philip B. Knapp, Lynbrook, N.Y., assignor to Minnesota Mining & Manufacturing Co., St. Paul, Minn.

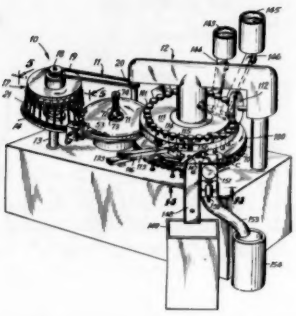
Filed Apr. 30, 1973, Ser. No. 355,701

Int. Cl. B29c *3/02*; **B30b** *11/12*

U.S. Cl. 425—110 **6 Claims**

1. A tableting apparatus for forming an environmental seed cell having a central seed surrounded by layers of compressed environmental material comprising, in combination, means for selecting single seeds from a bulk seed supply, conveyor means including a conduit for receiving said single seeds and advancing the same in an air stream flowing through said conveyor means, transfer mechanism positioned at the terminal end of said conveyor means for receiving said seeds, said transfer mechanism including a support table, a distributor disk slidably mounted over said support table and including individual pockets, means for rotating said distributor disk relative to said table serially to align said pockets with said terminal end of said conveyor, said disk moving in timed relation sequentially to align a pocket with said terminal end as each seed emerges from said end, an air relief passage means formed in said disk and communicating with each said

pocket, a screen member disposed in each said air release passage, said screen being of a size to permit flow of air therethrough and to block the passage of said seed, a vertically disposed discharge aperture means formed in said table in the path of movement of said pockets for receiving seeds advanced by said pockets, tableting means including a mold disk



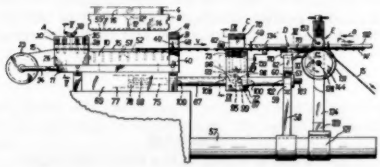
having a multiplicity of mold cavities and means for rotating the cavities of said mold disk into registry with said discharge aperture in said table in synchronism with the movement of said pockets of said distributor disk into registry with said aperture, whereby individual seeds are deposited in said mold cavities.

3,849,042

INJECTION MOLDING MACHINE FOR PRODUCING SLIDE FASTENERS

Hans Anderegg, 3, Hetterstrasse, Weiningen, Zurich, Switzerland

Filed Nov. 16, 1972, Ser. No. 307,188
Int. Cl. B29f 1/10
U.S. Cl. 425—126 R **2 Claims**



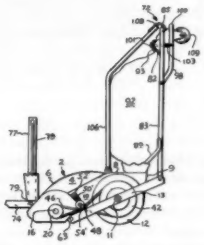
1. An injection molding machine for fabricating sliding fasteners, especially zippers, by injecting molding closure elements onto support bands in a bipartite mold, comprising: a bipartite mold, means for opening and closing said mold, an injection molding unit for injection molding material into said mold, a band feed mechanism for feeding support bands through said mold, said band feed mechanism comprising a to-and-fro movable band clamping mechanism provided with clamping elements and arranged in the band feed direction after the mold, pneumatically actuated means for displacing said to-and-fro movable band clamping mechanism, means for selectively opening and closing said clamping elements, stop means cooperating with said band clamping mechanism; said band clamping mechanism being synchronously controlled with the opening and closing movement of the mold in such a manner that when the mold is open the clamping elements fixedly clamp the support bands at the region of the mold, the clamping mechanism is then advanced in the feed direction until reaching said stop means in order to draw the support bands with the closure elements molded thereon out of the mold and to draw a new length of band into the open mold, upon impact of said clamping mechanism against said stop means the clamping elements release the support bands, and then the clamping mechanism is again retracted towards the mold and in its terminal position upon closing of the mold the clamping elements again fixedly clamp the support bands; said clamping elements comprising a relatively stationary clamping element and a clamping element movable with respect to the stationary clamping element and cooperating therewith, the support bands being guided between and through both clamping elements, said displacing means comprising guide rod means along which move said clamping mechanism, piston rod means for connecting said clamping mechanism with pneumatically actuated piston means for moving said clamping mechanism to-and-fro between said stop means and the mold; said movable clamping element being provided with a pressure compartment closed by a diaphragm, means for supplying compressed air to said pressure compartment, slide valve piston means for controlling connection of said pressure compartment with said compressed air supplying means, and venting channel means; so that when the clamping mechanism has reached the end of its stroke at the region of the mold and said piston means is impinged in order to displace the clamping mechanism in the feed direction against the other end of the stroke, said slide valve piston means opens connection of the compressed air supplying means to said pressure compartment in order to press the diaphragm against the movable clamping element and to displace said movable clamping element against the fixed clamping element for the purpose of fixedly clamping the support bands, whereas at the other end of the stroke of the clamping mechanism, said slide valve piston means impinges against said stop means and the pressure compartment is connected with said venting channel means to release the support bands.

3,849,043

ROTARY BRUSH SWEEPER AND BAGGER

Charles W. Doering, Louisville, Ky., assignor to Brinly-Hardy Co., Inc., Louisville, Ky.

Filed June 30, 1972, Ser. No. 268,064
Int. Cl. E01h 1/04
U.S. Cl. 15—79 **10 Claims**



1. An apparatus for collecting debris including:
a frame having wheels to support said frame;
a housing supported by said frame;
said housing having means to receive debris;
means disposed within said housing to compress debris received by said receiving means;
said compression means includes:
means cooperating with said housing to form a debris confining channel and a debris confining chamber within said housing, said debris confining channel being between said receiving means and said debris confining chamber and communicating with each;

and rotatable means including angularly spaced elements advancing the debris from said receiving means to said debris confining chamber and from said debris confining chamber to said debris confining chamber by each of said elements advancing from said receiving means to said debris confining chamber, from said debris confining chamber to said debris confining chamber, and from said debris confining chamber to said receiving means;

each of said elements cooperating with said cooperating means when each of said elements advances from said debris confining chamber to said debris confining chamber to reduce the extension of each of said elements in said debris confining chamber as each of said elements advances through said debris confining chamber;

means to operate said rotatable means;

said debris confining chamber having an outlet adapted to receive a debris containing device;

and said debris confining chamber having an increasing and fixed cross sectional area toward said outlet.

3,849,044

SPINNERET FOR SPINNING COMPOSITE MULTI-CORE FILAMENTS

Satoshi Ando, Osaka; Masao Matsui, Takatsuki, and Fumimaro Ogata, Nishinomiya, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan and Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milano, Italy

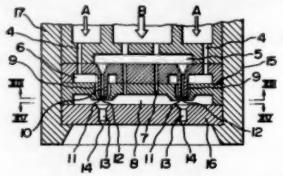
Division of Ser. No. 68,506, Aug. 31, 1970, Pat. No. 3,725,192 which is a continuation of Ser. No. 706,023, Feb. 16, 1968.

This application Dec. 11, 1972, Ser. No. 313,798

Claims priority, application Japan, Feb. 25, 1967, 42-11961; Feb. 25, 1967, 42-11962; Feb. 25, 1967, 42-11963

Int. Cl. D01d *3/00*

U.S. Cl. 425—131.5 **4 Claims**



1. A spinneret for spinning of composite filamentary material comprising sheath and core portions consisting of a first and a second polymeric material respectively, comprising:

a. an outer spinneret plate having spinning orifices bored therethrough;

b. an inner spinneret plate having internal injecting passages each coaxial to one of said spinning orifices to inject material in and about the axis of each spinning orifice and external injecting passages co-axial to said internal passages to inject material in each spinning orifice in the vicinity of the walls thereof;

c. a space confined between said inner and outer spinneret plates and communicating with the inlet end of said internal injecting passages;

d. first duct means connecting a source of a first sheath-forming fluid and pressurized polymeric material to both said space and said internal injecting passages; and

e. second duct means connecting a source of a second core-forming fluid and pressurized polymeric material to said external passages.

3,849,045

EXTRUSION DIE DEVICE

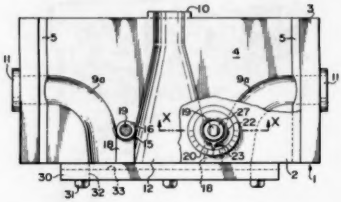
Shunjiro Ohkawa, Tokyo, and Katsumo Minagawa, Kawagoe, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 291,829

Claims priority, application Japan, Sept. 29, 1971, 46-75995

Int. Cl. B29f *3/04*

U.S. Cl. 425—131.1 **2 Claims**



1. An extrusion die device for extruding rubber material comprising, in combination, a die block having upper and lower die block sections secured to each other; a die attached to the front side of said die block and in alignment with the contacting line of said upper and lower die block sections; a plurality of passages including complementary channels formed on the upper surface of said lower die block section and on the lower surface of said upper die block section, said complementary channels extending to the rear side of said die and being merged with each other at at least a position spaced from the rear side of said die; a shaft rotatably supported by said upper and lower die block sections at the position where said complementary channels are merged with each other, said shaft extending outwardly of the die block and being manually rotatable at the outer end portion of said shaft; a vane secured to said shaft at said position, said vane extending to the rear side of said die to vary the relative amount of the rubber materials passing through said passages; fixing means for fixing said shaft at a predetermined position with a screw formed on the outer end portion of said shaft and a nut on said screw; graduation means on the external surface of said die block; and a pointer attached to said shaft to indicate the rotational position of said shaft on said graduation means.

3,849,046

EXTRUDER WITH ROTATING DIE HEAD

Nikolai Efimovich Kalakov; Svyatoslav Sergeevich Shipitsin, both of ulitsa K. Marxa, 10, kv. 10; Veniamin Alexandrovich Minchenko, Mikroraion 13, 15, kv. 75; Innokenty Mikhailovich Kudryavtsev, ulitsa Zhilyabieva, 13, 29; Vladimir Afanasievich Zimin, ulitsa Pushina 9/13, kv. 1, and Boris Antonovich Pervitsky, ulitsa Sayanskaya, 13, kv. 71, all of Angarsk, Irkutskoi oblasti, U.S.S.R.

Filed Sept. 18, 1972, Ser. No. 290,144

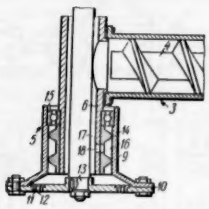
Claims priority, application U.S.S.R., Jan. 26, 1972, 174822; Apr. 12, 1972, 1772494

Int. Cl. B29f *3/06*

U.S. Cl. 425—208 **2 Claims**

1. A machine for granulation of pastelike materials, comprising an extruder with an internally rotating screw and an attachment for feeding pastelike material, said attachment including means adapted to rotate and feed said material to said rotating screw; a rotating die head; a connecting pipe coupling the body of said extruder with the body of said die head; a die disk with dies fixed on the body of said die head; an independent drive with a shaft housed in said connecting

pipe and rigidly coupled with said die disk; a packing comprising a profile-shaped bushing with an annular recess on its



outer surface said packing located between the body of said die head and said connecting pipe.

3,849,047

DEVICE FOR PRODUCING A CONTINUOUS DOUGH STRIP

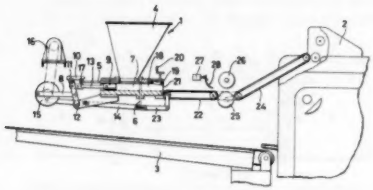
Kate Kemper, Wybuelstrasse 6, CH-8702 Zurich-Zollikon, Switzerland

Filed Jan. 26, 1973, Ser. No. 326,857

Claims priority, application Germany, Jan. 28, 1972, 2203969

Int. Cl. A21c *5/00*

U.S. Cl. 425—238 **14 Claims**



1. A device for producing a continuous strip of dough, having an adjustable constant height and width, and feeding the strip into a dough working machine, said device comprising, in combination, a dough receiving hopper arranged to contain a mass of dough and having a discharge mouth; a cylinder positioned beneath said hopper and having a lateral inlet, communicating with said discharge mouth, and an axial outlet; respective closing means operable to close said inlet and said outlet, the closing means at said inlet being operable to separate, from the mass of dough, a piece of dough discharged through said inlet into said cylinder; a cylindrical chamber, having a diameter substantially equal to that of said cylinder and open at both ends, communicating coaxially with said outlet; a piston reciprocable in said cylinder; means, including a linkage connected to said piston, operable to advance said piston to move a separated piece of dough in said cylinder through said outlet and into said chamber for joining to dough in said chamber to form a continuous strip of dough, and to retract said piston beyond said inlet; a first transport device positioned to receive the dough strip from said cylindrical chamber; first driving means connecting said first transport device to said linkage for step-by-step operation of said first transport device in synchronism with reciprocation of said piston; a second transport device positioned to receive the dough strip from said first transport device, and driven by the dough working machine; and dough strip smoothing roller means between said first and second transport devices and driven in synchronism with said second transport device.

3,849,048

DISTRIBUTOR AND NOZZLE ASSEMBLY FOR INJECTION-MOLDING MACHINES

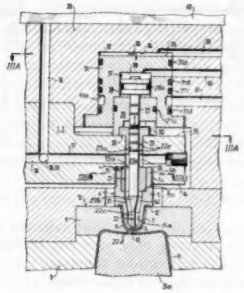
Friedrich Bernd Bielfeldt, Aidenried, and Richard Herbst, Munchen, both of Germany, assignors to Krauss-Maffei A.G., Munchen, Germany

Filed May 3, 1972, Ser. No. 250,078

Claims priority, application Germany, May 4, 1971, 2121895

Int. Cl. B29f *1/03*

U.S. Cl. 425—247 **8 Claims**



1. An injection-molding machine comprising an injection member adapted to displace a stream of thermoplastic synthetic-resin material at an elevated pressure; a mold member having at least one mold cavity and a plurality of inlet orifices in spaced-apart relationship, each communicating with a mold cavity; and a distributor member interposed between said injection member and said mold member for distributing said synthetic-resin from said injection member to said orifice, at least one of said members being shiftable relative to another of said members for urging said members together for distribution of said material, said distributor member comprising a respective nozzle assembly registerable with and adapted to communicate with each of said orifices, said distributor member having respective generally annular surfaces surrounding each of said orifices, and means for selectively displacing said surfaces for applying same against said mold member for individual sealing of said nozzle assemblies with said orifices, said mold member comprising a mold-bottoming plate formed with said orifices and juxtaposed with said distribution member, said mold-bottoming plate being provided with respective recesses opening in the direction of said distributing member and communicating with the respective orifices, said distributing member comprising a body provided with a plurality of arms together formed with one of said nozzle assemblies and a central passage communicating with said injection member and respective passages traversing said arms from said central passages to the respective assemblies, each of said nozzle assemblies comprising an injection nozzle head receivable with limited clearance in the respective recess and provided with an injection orifice, and a valve needle received in the respective nozzle head for selectively blocking the injection orifice thereof, each of said surfaces surrounding the respective nozzle head and bearing annularly upon said mold-bottoming plate around the respective clearance, said body being provided at each arm with a respective hydraulically displaceable piston operatively connected to the respective needle for controlling the displacement thereof.

3,849,049

APPARATUS FOR THE BLOW MOLDING OF HOLLOW BODIES MADE OF THERMOPLASTIC SYNTHETIC MATERIAL

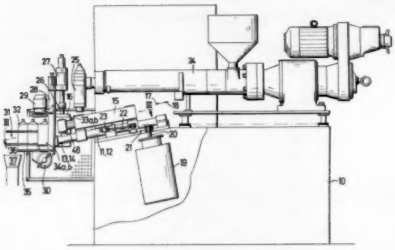
Ewald Brieschke; Erich Kiefer, both of Bonn-Holzlar, and Heinz Rolniczak, Hennef-Stossdorf, all of Germany, assignors to Kautex-Werke Reinold Hagen GmbH, Bonn-Holzlar, Germany

Filed Sept. 12, 1972, Ser. No. 288,357

Claims priority, application Germany, Sept. 13, 1971, 2145673

Int. Cl. B29d *23/03, 23/04*

U.S. Cl. 425—326 B **18 Claims**



1. In an apparatus for making hollow bodies of thermoplastic synthetic material using blow molding technique of the type that includes (a) an extruder supplying a parison, (b) a receiving station in the zone of said extruder, (c) a removing station spaced from said receiving station, (d) a hollow mold, (e) means for opening and closing said mold, (f) means for reciprocating said mold between said receiving station in which said mold is charged with a parison and said removing station in which a finished blow molded article is removed from said mold, (g) a support member possibly embodied as a mandrel introducible into said mold for expanding said parison therein by a fluid medium, the improvement comprising, in combination:

A. guide means having a free end and extending substantially normal to the direction of extrusion;

B. a carriage slidably mounted on said guide means;

C. first drive means for moving said carriage back and forth on said guide means; and

D. a bridge carried by said guide means in the vicinity of its said free end, said mandrel being disposed on said guide means.

3,849,050

APPARATUS FOR EMBOSSING PLASTIC MATERIAL

James M. Adams, Terre Haute; Randall R. Hopper, Shelburn, and James K. Rutherfoord, Garland E. Raley, Terre Haute, all of Ind., assignors to Ethyl Corporation, Richmond, Va.

Filed Jan. 15, 1973, Ser. No. 323,452

Int. Cl. B29c *15/00*

U.S. Cl. 425—363 **13 Claims**

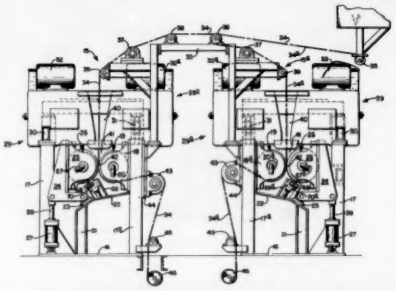
1. In an apparatus for supplying and recirculating heated air for embossing thermoplastic film, the combination comprising:

a. an elongated housing having a narrow, rectangular heated air exit slot and an adjacent, narrow, rectangular return air entry slot extending substantially the full width of said housing;

b. longitudinal divider means within said housing separating the interior of said housing into a heated air supply compartment and a return air compartment;

c. heating means in one of said compartments for heating the air moving through said compartment;

d. means connecting said heated air supply compartment to said return air compartment;



e. fan means for recirculating air through said heated air supply compartment and said return air compartment; and

f. power means located outside of said housing connected to said fan means for driving said fan means.

3,849,051

EXTRUSION APPARATUS

Erik Solbeck, 342, Vedbaek Strandvej, Vedbaek, Denmark

Filed Feb. 1, 1973, Ser. No. 328,556

Claims priority, application Denmark, Feb. 16, 1972, 719/72; Feb. 16, 1972, 720/72

Int. Cl. B29f *3/00*

U.S. Cl. 425—376 **11 Claims**

1. An extrusion apparatus for producing sheet-material in great width dimensions consisting at least partly of a thermoplastic material, comprising at least two extruders; a wide-orifice extrusion die including at least one die channel extending throughout the length of the die and an outlet slit communicating with said die channel for extruding thermoplastic material; means for connecting said extruders to said extrusion die to provide a direct communication from each extruder to one and the same die channel; a roller system including at least one cooling roller for cooling the sheet-material subsequent to the extrusion of thermoplastic material and a number of transport rollers for conveying the sheet material produced after cooling; means for supporting at least one of said extruders for movement in the width direction of the extrusion die; and means for mounting said roller system to be displaceable transversely to the axial direction of the die.

3,849,052

PIPE BELLING MACHINE

John Gordon, 520 Lancaster Ave., Frazer, Pa. 19355

Filed July 19, 1973, Ser. No. 380,540

Int. Cl. B29c *17/07*

U.S. Cl. 425—387 **24 Claims**

1. In a pipe belling machine, the combination of

A. a frame having a longitudinal axis,

1. said frame having an inlet end and a remote end;

B. a pipe receiving station supported by the frame,

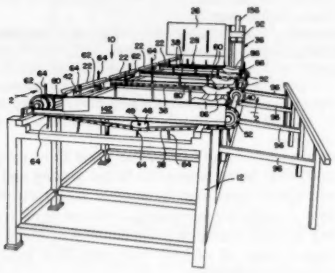
1. said pipe receiving station receiving lengths of previously cut pipes from a source exterior of the machine;

C. a heater mounted at the inlet end of the frame,

1. said heater defining at least one pipe end heating station;

D. a chain conveyor functioning transversely of the said longitudinal axis,

1. said conveyor including means to urge the pipes transversely across the frame,



2. a portion of each said pipe being positioned within the heating station for pipe end heating purposes as the pipe is urged across the frame;

E. a belt rotative about the frame and having an upper path and a lower path of travel,

1. the said pipes resting upon the upper belt path and being rotated thereby upon operation of the belt; and

F. a belling station receiving the pipes from the heating station,

1. said belling station including means to impress a bell shape upon the previously heated end of the pipe.

3,849,053

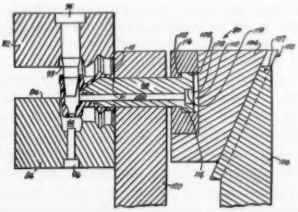
MOLD FOR FABRICATING THE HOUSING OF A DISPENSING VALVE FOR PRESSURIZED DISPENSERS

Roger K. Bruce, Mission Viejo; Werner Marhold, Huntington Beach, and Cecil F. Adickes, Playa del Rey, all of Calif., assignors to Sterigard Corporation, Santa Ana, Calif.

Continuation-in-part of Ser. No. 114,204, Feb. 10, 1971, Pat. No. 3,734,125. This application July 2, 1973, Ser. No. 375,674

Int. Cl. B29c *1/14, 7/00*

U.S. Cl. 425—438 **13 Claims**



1. An improved mold for the fabrication of a dispensing valve housing having a barrel and a base, the barrel having a bore and the base having a hollow interior, the longitudinal axes of the bore and the barrel being at right angles to one another, the barrel having an external mounting flange at a rear end thereof, the mold comprising:

a. an upper and a lower mold half having mold cavities defining the external surface of the dispensing valve housing;

b. a core pin carried by the upper mold half and defining the bore of the barrel;

c. means for raising the upper mold half relative to the lower mold half to separate the upper mold half from the housing;

d. a base core for defining the hollow interior of the base;

e. means for raising the core relative to the lower mold half simultaneously with the raising of the upper mold half and at a slower rate to separate the lower mold half from the housing at substantially the same time that the upper mold half separates from the housing;

f. means for drawing the core from the base after the upper mold half and its carried core pin are raised from the lower mold half; and

g. a parting surface between the upper and lower mold halves defined by a barrel parting plane perpendicular to the axis of the barrel and extending to a terminus on the barrel of the barrel's external flange, a base parting plane extending parallel to the barrel parting plane and containing the base's longitudinal axis, the base parting plane terminating in the barrel at a line measuring parallel to the axis of the base, the base parting plane termination line extending no further than the terminus of the barrel parting plane in the barrel, and a transition plane connecting the base and barrel parting planes.

3,849,054

POTTERS WHEEL HEADS

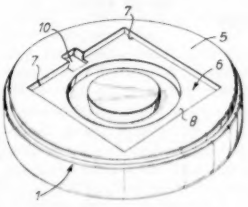
Rene Jordache, 42 Laurier Rd., London, England

Filed Dec. 29, 1972, Ser. No. 319,875

Claims priority, application Great Britain, June 1, 1972, 25640/72; June 1, 1972, 25642/72

Int. Cl. B28b *1/29*

U.S. Cl. 425—459 **15 Claims**



1. A device for attachment to a rotatable potters wheel head comprising:

a main body having an upper and lower surface;

means, carried by said body, for connecting said body to the wheel head so that said body rotates with the wheel head; and

means, located adjacent the upper surface of said body, for receiving a member adapted to be interposed between said body and the clay to be modelled and for coupling the member to said body for rotation therewith,

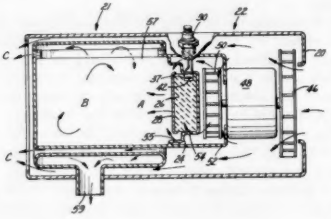
said means for connecting comprising an annular, beaded, flexible flange descending from said body lower surface and adapted to grip the periphery of the wheel head.

3,849,055

LIQUID FUEL HEATER IMPROVEMENT

Edward I. Stanley, North Olmsted, and Donald G. Batchelor, Chagrin Falls, both of Ohio, assignors to Stacee Manufacturing, Inc., Cleveland, Ohio

Filed Mar. 4, 1974, Ser. No. 447,671
Int. Cl. F23d 3/40
U.S. Cl. 431—7 8 Claims



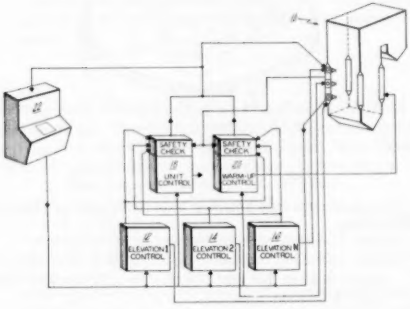
1. In a liquid fuel heater including a granular refactory block, two ports extending into the refactory block, a fuel supply means delivering fuel to said refactory block through a first of said ports, and means conveying air under pressure to penetrate said refactory block and vaporize the fuel delivered to the refactory block, an improvement in said liquid fuel heater comprising a cavity disposed entirely within the said refactory block, said two relatively adjacent ports terminating in said cavity, asbestos wick material positioned within said cavity, and igniter means supported adjacent to said asbestos wick material within a second of said ports.

3,849,056

COMPUTER BASED PLANT PROTECTION SYSTEM

Jack Ascher Schuss, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 2, 1972, Ser. No. 303,239
Int. Cl. F23n
U.S. Cl. 431—24 4 Claims



1. A protection system for a furnace, the furnace having a plurality of burners and associated ignitors situated at each of a plurality of vertically displaced elevations, condition responsive signal generators being associated with each furnace elevation for providing signals commensurate with the state of the burners and ignitors and the presence of flame, said protection system comprising:

a plurality of first programmable controllers, each of said controllers of said first plurality being associated with one of said furnace burner elevations and receiving signals commensurate with the state of the burners and ignitors at that elevation and the presence or absence of flame, each of said controllers of said first plurality providing output signals for controlling the ignitors and burners at the associated elevation in accordance with the received signals and a stored program, each of said controllers of said first plurality further generating an arming signal commensurate with the condition of flame desired and a flame failure signal;

a second programmable controller, said second controller being responsive to the arming and flame failure signals generated by each of said controllers of said first plurality for generating a control signal for terminating furnace operation when the arming and flame failure signals from all of said first controllers indicate unsafe operating conditions;

a third programmable controller, said third programmable controller being responsive to the arming and flame failure signals generated by each of said controllers of said first plurality for generating a control signal for terminating furnace operation when the arming and flame failure signals from all of said first controllers indicate unsafe operating conditions;

means for delivering the arming and flame failure signals provided by each of said controllers of said first plurality to said second and third controllers; and

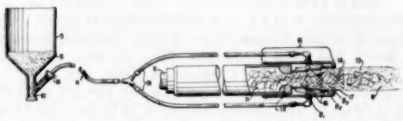
means connecting the outputs of said second and third controllers in parallel.

3,849,057

JET FLAME CLEANING AND COATING APPARATUS AND METHOD

Clifford Peck, Elberton, Ga., and Clarence A. Garrison, Monroe, La., assignors to C. S. Peck Co., Inc., Elberton, Ga.

Division of Ser. No. 97,553, Dec. 14, 1970, Pat. No. 3,741,792.
This application Apr. 10, 1973, Ser. No. 349,819
Int. Cl. B05b 7/20, 7/02
U.S. Cl. 431—158 4 Claims



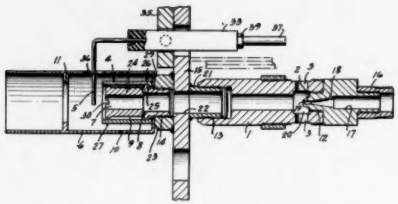
1. A flame jet apparatus comprising a combustion chamber, pressurized means for feeding a hydrocarbon fuel and oxidant into said chamber, said chamber having at least one outlet orifice for releasing a combustion jet flame, a venturi type adapter disposed outwardly of said outlet orifice, a non-pressurized container for storing a material to be dispensed, and at least one pick-up line leading from said venturi adapter to said container, whereby passage of the combustion jet flame past the venturi adapter creates a vacuum in said pick-up line drawing said material into said flame, said apparatus being characterized by a pair of oppositely disposed pick-up lines positioned on a generally cylindrically formed venturi adapter, said adapter having a plurality of graduated, stepped internal bores that are provided with at least two apertures in each of said bores and which are located proximate to the point of entry of said pick-up lines into said venturi adapter.

3,849,058

GAS BURNER FOR COKE OVEN EXHAUST GAS

Horst Pankow, Gelsenkirchen, Germany, assignor to Gewerkschaft Schalker Eisenhuette

Filed Feb. 12, 1973, Ser. No. 331,808
Claims priority, application Germany, Feb. 24, 1972, 2208776
Int. Cl. F23q 3/00
U.S. Cl. 431—264 5 Claims



1. A gas burner particularly adapted to burn coke oven exhaust gas comprising,

a mixing tube for the mixing of the gas with air to provide a combustible mixture,

a gas feeding nozzle at the intake end of said mixing tube have a converging discharge end extending into said mixing tube and creating a Venturi effect,

air inlet passageways leading into said mixing tube adjacent the converging discharge end of said feeding nozzle to accommodate the drawing of air into said mixing tube by the gas passing through said feeding nozzle to produce a combustible mixture in said mixing tube,

a burner head concentric with said mixing tube in communication therewith,

an electrical igniter spaced in advance of said burner head, a burner tube extending about said burner head and in advance thereof,

said burner head having a cylindrical main passageway and an auxiliary annular passageway extending about said main passageway concentric therewith and having communication with said main passageway adjacent the downstream end of said burner head.

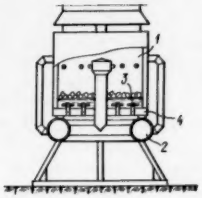
3,849,059

DEVICE FOR BURNING LIQUID COMBUSTIBLE WASTES

Vladimir Ivanovich Filippov, ulitsa 8 Marta, 2/10, kv. 93, Moscow, and Mikhail Vasilievich Sumarokov, ulitsa kirova, Kvartal 116, korpus 26, kv. 38, Ljubertsy Moskovskoi oblasti, both of U.S.S.R.

Filed Nov. 14, 1973, Ser. No. 415,901
Claims priority, application U.S.S.R., Nov. 15, 1972, 1845735
Int. Cl. F23d 5/02
U.S. Cl. 431—331 1 Claim

1. A device for burning liquid combustible wastes, comprising: a combustion chamber containing a barbotage bath; a plurality of air-guiding element disposed in said chamber for imparting rotational motion to liquid combustible wastes contained therein; an air-supplying head disposed beneath the barbotage bath of said chamber; a plurality of branch pipes vertically installed and uniformly spaced along the bottom of the said bath for permitting communication between said air supplying head and said air-guiding elements, each of said air-guiding elements being constructed as a block of guiding nozzles located beneath the surface of said bath and freely installed in respective ones of said branch pipes for rotation in a horizontal plane, said nozzles being substantially inclined



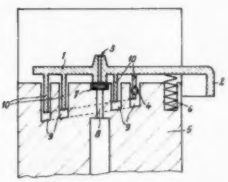
downwardly with respect to the bottom surface of said barbotage bath.

3,849,060

CIGARETTE LIGHTER WITH BAFFLE

Pierre Chevallier, Sainte-Foy-Los-Lyon, France, assignor to Etablissements Genoud & Cie. Societe Anonyme, Venissieux (Rhone), France

Filed Apr. 5, 1973, Ser. No. 348,106
Claims priority, application France, Apr. 7, 1972, 72.12863
Int. Cl. F23d 13/04
U.S. Cl. 431—344 1 Claim



1. In a cigarette lighter operating with gaseous fuel and having a body provided with a member formed with an outlet orifice for the gaseous fuel, and a lever member pivotally mounted on said body for selectively opening and closing said orifice, the improvement wherein:

one of said members is formed with a plurality of concentric grooves open in the direction of the other member and each extending endlessly around said orifice;

said other of said members is formed with a respective lip received in each groove between the flanks thereof, said lips projecting in the direction of said one of said members and extending endlessly around said orifice to form a labyrinth seal with said flanks of said grooves, said lever including a burner outlet orifice; and a valve-forming washer located between said burner outlet orifice and said body outlet orifice.

3,849,061

VERTICAL KILN CONTROL

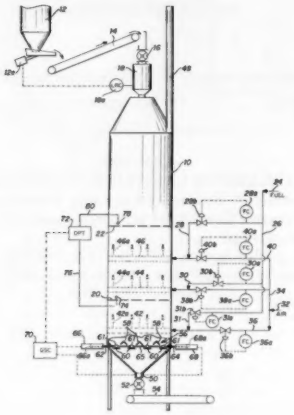
James R. Summer, Blum Hill, Tex., assignor to Round Rock Lime Company, Blum, Tex.

Filed July 30, 1973, Ser. No. 383,484
Int. Cl. F27b 1/26
U.S. Cl. 432—47 19 Claims

1. A process for heat treating particulate material of nonuniform gradation in a vertical kiln having a particulate material inlet at the upper end thereof and a particulate material outlet at the lower end thereof comprising:

a. supplying a heat input to the burning zone of said kiln sufficient to treat a charge of standard particles having a predetermined mass residence time which is based upon a predetermined bulk density and a predetermined flow rate of particles therethrough;

b. delivering said particulate material to said inlet of said vertical kiln at a sufficient rate to maintain said kiln filled with particulate material from said outlet through said burning zone, passing said particulate materials into the burning zone of said kiln, and continuously removing heat treated particulate material from said outlet;



c. sensing a quality indicative of the bulk density of said particulate materials passing through said burning zone; and

d. controlling the rate of said particulate material passing through said burning zone in step (b) relative to a comparison of said quality with a quality indicative of said predetermined bulk density to yield a mass residence time equivalent to said predetermined mass residence time within said burning zone and substantially uniformly heat treated particulate materials.

3,849,062

REINFORCED FUSER ROLL CONSTRUCTION

Raghulinga R. Thettu, Webster, and Edward G. Williams, Macedon, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 21, 1973, Ser. No. 361,923

Int. Cl. G03g *13/20*

U.S. Cl. 432—60 **7 Claims**

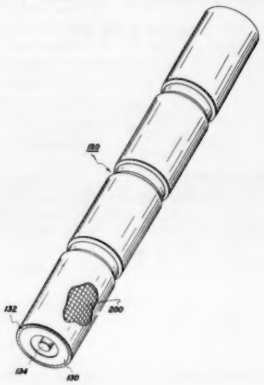
1. In an electrostatic reproduction machine in which the fusing device for fusing powder images to copy sheets is accomplished by passing the powder image on the sheets through the nip of compressible rotatable members which apply heat and pressure, an improved fuser roll comprising:

a rigid core member;

a thin coating of elastomeric material covering the surface of said core member;

said elastomeric coating having a reinforcing jacket positioned thereon;

said jacket being formed by a plurality of strands of heat stable material in a predetermined pattern;



wherein said reinforcing jacket material has a tensile strength exceeding that of said elastomeric coating; and wherein said reinforcing jacket material has elongation characteristics less than that of said elastomeric coating.

3,849,063

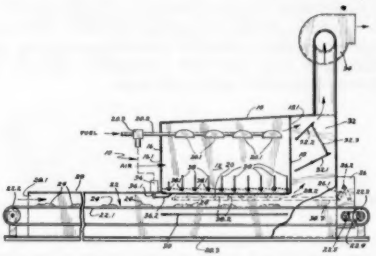
SAFE INFRARED RADIATION-EMITTING APPARATUS

John E. Eichenlaub, 9321 Franklin Ave., West, Minneapolis, Minn. 55426

Filed Oct. 9, 1973, Ser. No. 404,306

Int. Cl. F27b *9/14, 5/00*

U.S. Cl. 432—185 **21 Claims**



1. Apparatus for safely emitting infrared radiation comprising a source of infrared radiation, an infrared radiation-transmissive, flexible wall softenable at a temperature below 1,000° F. and having a surface confronting the radiation source but spaced therefrom, means for transporting a coolant across the opposed surface of the wall to cool the latter, and means preventing access of the coolant to the radiation source.

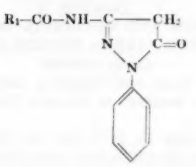
CHEMICAL

3,849,064
METHOD AND COMPOSITIONS FOR THE DYEING OF HUMAN HAIR

Erik Wiskott, Bottmingen Basel-Land, Switzerland, assignor to Therachemie Chemisch Therapeutische GmbH, Dusseldorf, Germany

Filed Sept. 24, 1970, Ser. No. 75,304
Claims priority, application Germany Oct. 2, 1969, 1949748
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.2 **5 Claims**

1. In the process of dyeing human hair which comprises applying to the hair at temperatures of from 10° to 40°C an effective amount of an aqueous composition for dyeing human hair comprising an oxidation dyestuff combination of a developer component and a coupling component at a pH from 8 to 10 in the presence of an oxidizing agent, the improvement which comprises utilizing as said oxidation dyestuff combination, (a) from 0.3 to 5 percent by weight of said composition, of a coupling component 3-amino-pyrazol-5-one having the formula



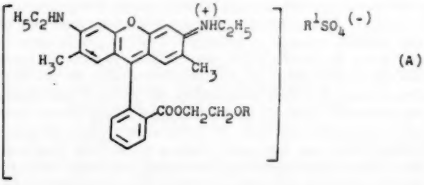
wherein R_1 is selected from the group consisting of alkyl having one to six carbon atoms, phenyl, halophenyl, and cyclohexyl, and (b) from 0.3 to 5 percent by weight of said composition, of a developer component compound selected from the group consisting of (1) an aromatic amine, (2) a 4-amino-pyrazolone, and (3) an amino-pyridine.

3,849,065
RHODAMINE DYE SOLUTIONS

Karl Schmeidl, Frankenthal, Germany, assignor to Badische anilin and Soda-Fabrik aktiengesellschaft, Ludiurgshafen/Rhein, Germany

Filed July 24, 1972, Ser. No. 274,580
Int. Cl. D06p *1/42*; **C09b** *11/28*
U.S. Cl. 8—25 **2 Claims**

1. A stable highly concentrated solution of an esterified rhodamine dye of the formula (A)



(A)

in which

R is hydrogen, acetyl, propionyl, alkyl of one to four carbon atoms or a radical of the formula $(CH_2CH_2O)_nR^2$;

n is the integer 1 or 2;

R^1 is hydrogen, methyl or ethyl; and

R^2 is hydrogen, acetyl, propionyl or alkyl of one to four carbon atoms.

3,849,066
METHOD OF INCREASING COVERING POWER OF KNITTED COTTON FABRIC

John G. Frick, Jr., and Gloria A. Gautreaux, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sept. 13, 1972, Ser. No. 288,806
Int. Cl. D06c *15/00*
U.S. Cl. 8—115.5 **2 Claims**

1. A method for increasing the opacity and covering power of a cellulosic knitted fabric comprising impregnating said fabric with a cross-linking agent, passing the impregnated fabric through press rollers which are heated to about 100° C. to 110° C. and which exert a pressure on said fabric of about 0.1 to 0.5 tons per centimeter of roll widths, and reacting the cross-linking agent with said fabric after passing the fabric through said rollers.

3,849,067
PROCESS FOR THE MERCERIZATION OF COTTON FABRICS WITH LIQUID AMMONIA AND AMMONIA/AMINE SOLUTIONS

Timothy A. Calamari, Jr.; Wilson A. Reeves; Sidney P. Schreiber, and Albert S. Cooper, Jr., all of Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 7, 1971, Ser. No. 141,359
Int. Cl. D06m *1/06*, *1/10*
U.S. Cl. 8—115.7 **8 Claims**

1. A liquid ammonia mercerizing process consisting of tensioning, in both the width and the length dimensions, a fibrous fabric selected from the group consisting of a cotton fabric and a cotton/synthetic fiber blend fabric containing at least 25 percent of cotton, immersing the tensioned fabric in liquid ammonia for a period of about from 0.1 second to 1.0 second, stretching the immersed fabric to a progressively increasing degree of tension over a series of incrementally larger rollers during the immersion and during the subsequent step of removing ammonia from the fabric by volatilization, continuing the tensioning and progressive stretching of the fabric until at least about 90 percent of the ammonia has been removed from the fabric by volatilization, the time interval measured from immersion of the fabric in the liquid ammonia until at least about 90 percent of the ammonia has been removed by volatilization being limited to within 12 seconds and the dimensional stressing of the fabric accomplished by reason of the tensioning and progressive stretching of the fabric being maintained within the limits of about from 1 to 15 percent elongation relative to the length dimension and sufficient to restrict shrinkage in the width dimension to less than 5 percent, thereby to obtain a fibrous fabric in which essentially only the fiber surfaces have been modified.

4. A liquid ammonia mercerizing process consisting of tensioning, in both the width and the length dimensions, a fibrous fabric selected from the group consisting of a cotton fabric and a cotton/synthetic fiber blend fabric containing at least 25 percent of cotton, immersing the tensioned fabric in liquid ammonia for a period of about from 0.1 second to 1.0 second, stretching the immersed fabric to a progressively increasing degree of tension over a series of incrementally larger rollers during the immersion and during the subsequent step of removing ammonia from the fabric by quenching the fabric with water and removing the water from the fabric by volatilization, continuing the tensioning and progressive stretching of the fabric until the fabric is dry, the time interval measured from immersion of the fabric in the liquid ammonia until at least about 90 percent of the ammonia has been re-

moved by the treatment with water being limited to within 12 seconds and the dimensional stressing of the fabric accomplished by reason of the tensioning and progressive stretching of the fabric being maintained within the limits of about from 1 to 15 percent elongation relative to the length dimension and sufficient to restrict shrinkage in the width dimension to less than 5 percent, thereby to obtain a fibrous fabric in which essentially only the fiber surfaces have been modified.

3,849,068

PROCESS FOR CONTINUOUS TREATMENT OF WEBS WITH HOT LIQUIDS

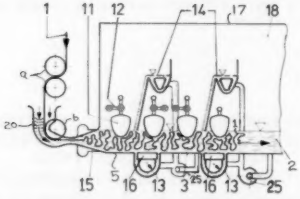
Christian August Meier-Windhorst, uber Hamburg-Harburg, 2101 Lindhorst, Germany

Filed Dec. 8, 1972, Ser. No. 313,362

Claims priority, application Germany, Dec. 8, 1971, 2160799

Int. Cl. B05c *3/04, 3/176*

U.S. Cl. 8—151 **6 Claims**



1. Process for the continuous liquid treatment of a web of textile and like material, comprising the steps of:

a. continuously introducing said web and a stream of treating liquid into a liquid treating zone, maintaining a body of treating liquid in said zone, the depth of the body of liquid being progressively greater from the inlet end to the discharge end of said zone, said web being kept submerged in said liquid;

b. inducing convective and turbulent currents in said body of treating liquid in said zone to cause said web to move therethrough with a crimped or curly edge contour, thereby increasing the overall residence time of the web therein;

c. continuously moving said web and said treating liquid in the same direction through said zone at substantially the same overall speed to effect a continuous concentration balance and an even distribution of the treatment over the entire web area;

d. maintaining the weight ratio of treating liquid to the web under treatment in said zone in the range from about 10:1 to about 50:1;

e. the speed of movement of said web within said treating zone in convoluted form being substantially less than the entrance speed of the flat web;

f. the overall residence time of the web in the body of treating liquid being sufficient to effect uniform and thorough treatment of the web by means of constantly changing directions of the web exposed surfaces; and

g. continuously removing said web and used treating liquid from said treating zone.

3,849,069

COMBUSTION APPARATUS AND METHOD FOR MATERIALS CONTAINING A RADIOACTIVE ISOTOPE TRACER

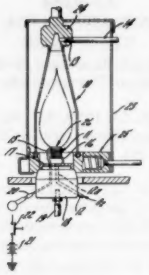
Niilo H. Kaartinen, Turku, Finland, assignor to Packard Instrument Company Inc., Downers Grove, Ill.

Filed June 19, 1972, Ser. No. 264,379

Int. Cl. G01n *31/00*

U.S. Cl. 23—230 PC **9 Claims**

1. An apparatus for the flame combustion of a starting material, comprising: a combustion chamber, an ignition basket in said combustion chamber, means for supplying gaseous oxygen to said combustion chamber, means for holding the starting material to be burned, said holding means adapted to be placed within said ignition basket and having a mouth



opening upwardly into the space above said ignition basket, and said holding means including an ignition promoting substance arranged around said mouth.

3,849,070

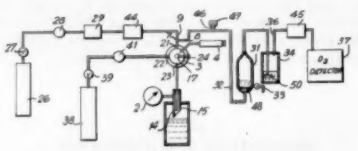
APPARATUS FOR AND METHOD OF DETERMINING OXYGEN AND CARBON DIOXIDE IN SEALED CONTAINERS

Adan C. Garza, Avon, and Vincent S. Bavisotto, Simsbury, both of Conn., assignors to Brewer's Unlimited, Inc., St. Paul, Minn.

Filed Sept. 25, 1972, Ser. No. 292,020

Int. Cl. G01n *1/16, 1/26, 33/14*

U.S. Cl. 23—230 R **9 Claims**



1. An apparatus for determining dissolved O_2 and CO_2 in a liquid in a container and O_2 in the headspace of said container, wherein said apparatus includes a source of inert gas for providing a stream of gas at a chosen rate, a pressure gauge for measuring total gas pressure in said container, hollow tubular piercing means for penetrating a container without loss or inleakage of gas at the region of penetration, said piercing means having a sharp tip, the tip of said piercing means being selectively positionable in the headspace or in the liquid after piercing said container, said pressure gauge being operatively connected with said piercing means, means for removing CO_2 and volatile organic components from a gas stream, and means for measuring the oxygen content of said gas stream, wherein said improvement comprises: valve means having first, second and third ports and an off position, and connecting means for connecting said first port to any of said second and third ports and said off position, a syringe detachably connected to said first port, a hollow probe tube lying within said hollow piercing means and having two ends, one of the ends of said hollow probe tube being proximate the tip of said piercing means and the other of its ends being connected to said second port of said valve means; and a branched tube having three ports, the first of said tube ports being connected to said third valve port, the second of said tube ports being connected to said source of inert gas and the third of said tube ports being connected to said means for removing CO_2 and volatile organic components from said gas stream and to said oxygen-content measuring means for introduction of a sample taken by said syringe and from said syringe into said gas

stream and flow in sequence through said means for removing CO_2 and volatile organic components and oxygen-content measuring means, thereby making it possible to determine the oxygen content of said sample, the CO_2 content of said sample being determinable from the reading of said pressure gauge.

3,849,071

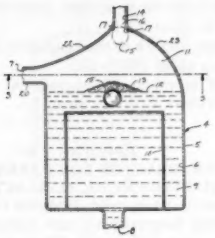
BLOOD-GAS SEPARATING SYSTEM FOR PERFUSATE CIRCULATION

Kenneth L. Kayser, 8435 W. Kenyon Ave., Wauwatosa, Wis. 53226

Division of Ser. No. 317,421, Dec. 21, 1972,. This application Aug. 27, 1973, Ser. No. 391,651

Int. Cl. A61m *1/03*

U.S. Cl. 23—258.5 **9 Claims**



1. A blood-gas separating system for perfusate circulation, comprising a blood supply, blood transfer means connected to said supply for adding a gas to be dissolved by the blood received from said supply and supplying blood containing the dissolved gas, and a blood-gas separating means including a blood conducting first outlet supplying blood for perfusate circulation and a second outlet, said separating means receiving blood containing dissolved gas and any undissolved gas from said transfer means and separating undissolved gas from the blood containing dissolved gas and passing blood free of undissolved gas through said blood conducting first outlet for perfusate circulation and including valve means responsive to the presence of blood and undissolved gas within said separating means, said valve means controlling the flow through said second outlet and providing a maximum open valve position when large accumulations of undissolved gas is present in said separating means thereby permitting the free flow of undissolved gas through said second outlet and a position for maximum restriction of said second outlet when large accumulations of blood free of undissolved gas is present in said separating means thereby permitting a controlled flow of gas and blood through said second outlet.

3,849,072

PLASMA SEPARATOR

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickson and Company, East Rutherford, N.J.

Filed Apr. 25, 1972, Ser. No. 247,483

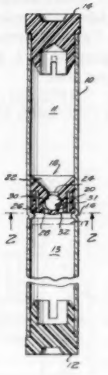
Int. Cl. G01n *9/30;* **B01d** *21/26*

U.S. Cl. 23—259 **29 Claims**

1. A separator device for separating light liquid constituents from heavier solid constituents of mixtures thereof, comprising:

a hollow elongate member having at least one end adapted for receiving the mixture;

means for sealing the open ends of said hollow member; and valve means fixedly positioned in said member for dividing the member into first and second sealed chambers, said valve means being normally closed to seal said first chamber and said second chamber from each other, said valve being responsive to a force in one direction for opening the valve so that the first and second chambers are in communication with each other while the force is



applied and said valve closing to interrupt said communication after the force terminates.

3,849,073

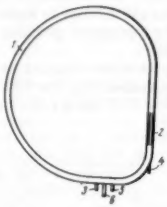
TUBULAR REACTOR FOR PRODUCTION OF CARBON BLACK FROM ACETYLENE BY DETONATION EXPLOSION

Pavel Alexandrovich Tesner, ulitsa Chapalygina, 2, kv. 3; Vadim Georgievich Knorre, ulitsa Dmitria Ulyanova, 4, korpus I, kv. 27; Vladimir Fedorovich Podkopaev, Proletarsky prospekt, 58, kv. 35, all of Moscow; Tamara Timofeevna Pakhtusova, Leninsky raion, poselok Razvilka, 8, kv. 8, Moskovskaya; Vsevolod Viktorovich Baaenkevich, Khlebozavodsky proezd, 5, korpus 2, kv. 382, Moscow, and Arkady Petrovich Astakhov, Leningradskaya ulitsa, 8a, kv. 44, Podolak, all of U.S.S.R.

Filed July 17, 1972, Ser. No. 272,666

Int. Cl. C01b *49/00;* **C09c** *1/49*

U.S. Cl. 23—259.5 **2 Claims**



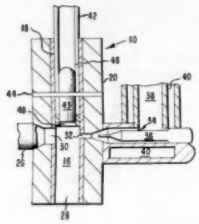
1. A tubular reactor for the production of carbon black from acetylene by detonation explosion, comprising: a reaction chamber housing formed of a closed loop having smoothly curving portions conjugated with a straight-linear portion adapted for stabilization of a detonation wave caused by the explosion, the reaction chamber being of an essentially constant-diameter tubular configuration; an acetylene inlet connection on said housing communicating with said chamber; an inert gas inlet connection on said housing communicating with said chamber; igniter means for igniting acetylene fed into said chamber, said igniter means communicating with said chamber adjacent one of the ends of said straight-linear loop portion, said straight-linear portion and said inert gas inlet connection being disposed on, respectively, either side of said igniter means; and a carbon black outlet connection being mounted on the housing in communication with said chamber.

3,849,074

APPARATUS FOR MIXING QUICKLY REACTIVE MATERIALS

Thomas Franklin Ficklinger, Landenberg, Pa.; Watt Nixon Jeter, Waynesboro, Va., and Kewal Krishan Likhyani, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 7, 1972, Ser. No. 312,956
Int. Cl. B01j 1/00; B08b 9/02; C08g 20/00
U.S. Cl. 23—285 1 Claim



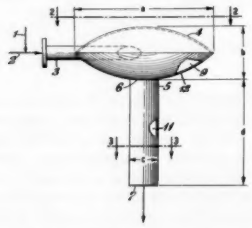
1. A novel mixing apparatus for quickly reactive fluid streams comprising walls defining an elongated mixing chamber of uniform cross-section along its length, discharge means at one end of said chamber, oppositely disposed jetting orifices in the walls of said chamber to allow streams of fluid components to enter the chamber and collide near the center of the chamber, a plunger positioned within the chamber and adapted to wipe the walls of the mixing chamber as it moves in the direction of the discharge means while permitting substantially continuous flow of the fluid components into the chamber, said plunger being hollow and slotted on opposite sides for alignment with the jetting orifices of the chamber, and wiper means positioned both within said hollow plunger and its slots, the said wiper means being located upstream of said jetting orifices and adapted to remain stationary with respect to the chamber walls whereby the plunger is wiped as it moves away from the discharge means.

3,849,075

CRACKING REACTOR

Charles W. Albright, and George E. Keller, II, both of South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 252,512, May 8, 1972, abandoned. This application May 14, 1973, Ser. No. 359,676
Int. Cl. B01f 3/04; B01j 1/00; C07c 11/04
U.S. Cl. 23—284 7 Claims



1. A reactor adapted for the cracking of hydrocarbons with hot gas comprising:

A. a circular convex lens shaped hollow structure having (i) two walls, which are joined at their peripheries to form the structure, at least one of said walls being provided with an orifice disposed substantially centrally therein; and (ii) at least one hollow inlet feed chamber open at both ends passing through a wall of the structure, one end of said feed chamber being disposed in the interior of the structure at about the juncture of the walls in such a manner that vapor, which is passed through said chamber, will flow substantially tangentially to the juncture, provided that the rate of flow is sufficient therefor, creating a vortex-like flow within the structure; and

B. at least one hollow tube open at both ends;

wherein:

a. one end of tube (B) is connected to structure (A) at about its orifice in substantially concentric alignment therewith and in open communication with structure (A);

b. the ratio of the length of structure (A) measured along a theoretical axis, which joins the center points of the walls, to the diameter of structure (A) measured across a theoretical plane perpendicular to the theoretical axis and bisecting structure (A) is about 0.05:1 to about 1:1;

c. the ratio of the equivalent diameter of the orifice of structure (A) to the equivalent diameter of tube (B) is about 1:1 to about 0.1:1;

d. tube (B) has a length to the equivalent diameter ratio of about 5:1 to about 200:1; and

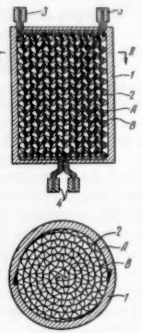
e. the ratio of the volume of structure (A) to the volume of tube (B) is about 0.01:1 to about 5:1.

3,849,076

CATALYTIC REACTOR FOR CARRYING OUT CONJUGATE CHEMICAL REACTIONS

Vladimir Mikhailovich Gryaznov, Leninskie Gory, MGU Zona L, kv. 11; Viktor Sergeevich Smirnov, Kutuzovsky prospekt, 26, kv. 555; Alexandr Petrovich Mischenko, Khersonskaya ulitsa, 7, korpus 4, kv. 515, and Sergei Ivanovich Aladyshev, ulitsa Grimau, 7/2, korpus 4, kv. 77, all of Moscow, U.S.S.R.

Filed June 21, 1972, Ser. No. 265,000
Int. Cl. B01j 9/04; C07c 3/58
U.S. Cl. 23—288 R 3 Claims

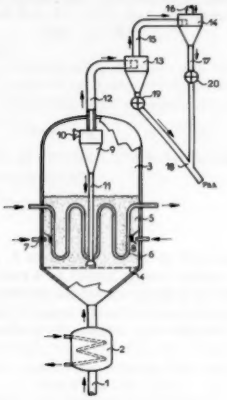


1. A catalytic reactor for carrying out conjugate chemical reactions, said reactor comprising: a hollow body encluding a cylindrical casing and opposite end covers, a thin-wall plate disposed in said body and coiled as a double spiral to define two reaction zones separated from one another by said thin-wall plate, said thin-wall plate being made of a palladium alloy that is selectively permeable to hydrogen and is catalytically active with regard to the reactions taking place in said two zones, said thin-wall plate having upper and lower edges which are sealably engaged in said covers of the body and end edges which are sealably engaged in the said casing, inlet means for feeding reactant products into said zones respectively, and outlet means for discharging the reaction products from said respective zones, said inlet means being disposed at one of the end covers and the outlet means at the other of the end covers, one of said inlet and outlet means comprising two conduits at diametrically opposite locations proximate said casing, and the other of said inlet and outlet means comprising two conduits adjacent one another centrally in said casing.

3,849,077
CONTINUOUS METHOD FOR THE RECOVERY BY CONDENSATION IN THE SOLID STATE OF SUBLIMABLE SUBSTANCES

Jacques Becuwe, Fontenay/Sous/Bois, France, assignor to Rhone-Progil, Paris, France

Filed Aug. 28, 1972, Ser. No. 284,348
Claims priority, application France, Sept. 9, 1971, 71.32531
Int. Cl. B01d 7/00
U.S. Cl. 23—294 17 Claims



1. In the continuous method for the recovery by condensation in the solid state of sublimable substances from within a gaseous mixture containing same, the steps of passing the gaseous mixture containing the substance to be collected through a fluidized bed of inert solid particles, maintaining the particles in the fluidized bed at a temperature below the condensation temperature of the substance whereby the substance condenses as a cover on the solid particles, projecting the solid particles against surfaces for dislodging condensed substance from the solid particles, and separating the dislodged condensed substance from the solid particles.

3,849,078
SEALING RING OF STAINLESS IRON BASE ALLOY

Glenn R. Gobble, and Richard G. Loebs, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 19, 1972, Ser. No. 299,103
Int. Cl. B32b 18/00; C22c 39/14
U.S. Cl. 29—183 1 Claim

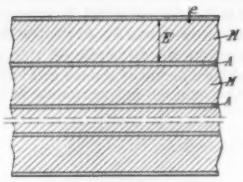
1. A sealing ring having a generally axially extending portion and a generally radially extending flange having high corrosion and abrasion resistance made of a stainless iron base alloy consisting essentially of 3.1 to 3.65 percent carbon, 24 to 27 percent chromium, up to 0.9 percent manganese, up to 1.50 percent silicon and the balance iron.

3,849,079
METALLIC MATERIALS BASED ON MARTENSITIC STEEL

Jean Montuelle, Bourg-la-Reine; Georges Chaudron, Paris, and Gerard Piaard-Legry, Fontenay-aux-Roses, all of France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar), Paris, France

Filed Dec. 15, 1970, Ser. No. 98,237
Claims priority, application France, Dec. 19, 1969, 69.44094
Int. Cl. C23c 39/20
U.S. Cl. 29—183.5 10 Claims

1. Massive ferrous metallic material having high mechanical strength and resistance in depth of the material to hydrogen embrittlement consisting essentially of a regular alternation of a plurality of layers of martensitic steel and of layers of austenitic structure having a resistance to corrosion higher and a mechanical resistance lower than those of said martensitic



steel, the thickness of each martensitic layer being of a magnitude equal to at least five times the average thickness of the adjacent austenitic layers situated respectively on both sides of the martensitic layer concerned.

3,849,080
ROTATIONALLY SYMMETRICAL HOLLOW COMPOUND BODY

Hartwin Zechmeister, Munich, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg AG, Munich, Germany

Filed Apr. 19, 1972, Ser. No. 245,575
Claims priority, application Germany, Apr. 19, 1971, 2118848
Int. Cl. B32b 15/00
U.S. Cl. 29—191.2 3 Claims

1. Rotationally symmetrical hollow compound body consisting of two layers, arranged one within the other, each part merging into the other without gaps, and characterized by the combination of the following features:

a. the inner layer essentially consists of metal selected from the group consisting of alloys on a nickel, titanium, cobalt or aluminum basis;

b. the outer layer essentially consists of a fibrous material selected from the group essentially consisting of tungsten, beryllium, steel, boron, carbon or silicon carbide fiber, which are arranged as coiled endless fiber, staple fiber or fiber matting, whereby the spaces between the individual fibers are cast with one of the metals mentioned under (a), thereby providing a low density structure;

c. said materials of the outer and inner layers being selected such that the heat expansion coefficient of the metal inner layer is equal to or larger than that of the outer layer, and said material of said outer layer exhibits a specific modulus less than the specific modulus of said material of the inner layer; and

d. when the compound body is at rest the outer layer shows evidence mainly of tensile stress, the inner layer mainly of pressure stress so that the compound body exhibits small radial deformations under rotation or with the application of an internal pressure.

3,849,081
POLYBUTADIENE COMPOSITIONS AND HYDROCARBONS THICKENED THEREWITH

Amandus D. Snyder, and William K. Taft, both of Lewiston, N.Y., assignors to Olin Mathieson Chemical Corporation, New Haven, Conn.

Filed July 22, 1959, Ser. No. 828,918
Int. Cl. C10l 7/02
U.S. Cl. 44—7 E 2 Claims

1. A polybutadiene composition obtained by adding to a latex, produced by emulsion polymerization of butadiene wherein the conversion of butadiene to polybutadiene is about 55 to 65 percent, from about 0.2 to 0.4 parts by weight of

acrylonitrile per 100 parts by weight of butadiene within a period of about 3 to 25 minutes prior to shortstopping the emulsion polymerization of the butadiene.

2. An incendiary gel consisting essentially of a liquid hydrocarbon thickened with from about 2 to about 10 percent by weight based upon the weight of the incendiary gel of the product obtained by adding to a latex, produced by emulsion polymerization of butadiene wherein the conversion of butadiene to polybutadene is about 55 to 65 percent, from about 0.2 to 0.4 parts by weight of acrylonitrile per 100 parts by weight of butadiene within a period of about 3 to 25 minutes prior to shortstopping the emulsion polymerization of the butadiene.

3,849,082

HYDROCARBON CONVERSION PROCESS

Robert H. Kozlowski, Berkeley; Robert P. Sieg, Piedmont, and John W. Scott, Ross, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed June 26, 1970, Ser. No. 50,123
Int. Cl. C10l *1/18*
U.S. Cl. 44—56 **6 Claims**

1. A process for producing a gasoline blending stock which comprises:

a. feeding an alcohol and a light hydrocarbon mixture containing at least tertiary olefins, linear olefins and isobutane to an etheration zone,

b. reacting the alcohol with the tertiary olefins in the etheration zone to obtain an ether and unreacted linear olefins and isobutane,

c. separating the ether from the linear olefins and isobutane,

d. feeding water and at least a portion of the linear olefins to a hydration zone,

e. reacting the water with the linear olefins in the hydration zone to obtain a product alcohol,

f. oxidizing the isobutane to obtain t-butyl alcohol, and

g. blending at least portions of the ether, product alcohol and t-butyl alcohol to produce a gasoline blending stock.

3,849,083

GASOLINE ADDITIVE

Michael Dubeck, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 14, 1972, Ser. No. 244,237
Int. Cl. C10l *1/22*
U.S. Cl. 44—72 **7 Claims**

1. Gasoline containing a carburetor detergent amount of an ether amine having the formula R—O—L—NH_2 wherein R is C_1–C_{40} alkyl and L is C_2–C_8 alkylene.

3,849,084

CALCIUM-STRONTIUM SMOKE INHIBITORS FOR DIESEL FUELS

Davis A. Skinner, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 88,885, Nov. 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 740,809, May 31, 1968, abandoned. This application July 3, 1972, Ser. No. 268,774
Int. Cl. C10l *1/26*
U.S. Cl. 44—70 **7 Claims**

1. A smoke suppressant for diesel fuels comprising a mixture of an oil-soluble hydrocarbon sulfonate, naphthenate or phenate of calcium and an oil-soluble hydrocarbon sulfonate, naphthenate or phenate of strontium, the metal content of the mixture comprising about 10–90 weight-percent calcium and about 90–10 weight-percent of strontium.

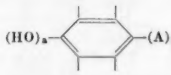
3,849,085

MOTOR FUEL COMPOSITION

Kenneth L. Kreuz, Fishkill, and Matthew A. McMahon, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed May 8, 1972, Ser. No. 251,001
Int. Cl. C10l *1/18*
U.S. Cl. 44—78 **10 Claims**

1. A motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range containing from about 0.01 to 0.25 volume percent based on said composition of a saturated aliphatic hydrocarbon substituted phenol represented by the formula:



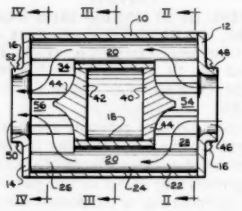
in which *a* represents an integer from 1 to 2, A represents a lower aliphatic radical having from 1 to 4 carbon atoms, *b* is an integer from 0 to 1, R represents an aliphatic hydrocarbon radical having an average molecular weight from about 500 to 3,500 and the residual open bonds are satisfied by hydrogen atoms.

3,849,086

SUPERCHARGER FOR INTERNAL COMBUSTION ENGINE CARBURETION

Howard R. Johnson, Grass Lake, Mich., assignor to Hush Company, Inc., Ann Arbor, Mich.

Filed July 20, 1973, Ser. No. 381,278
Int. Cl. F02m *21/04*
U.S. Cl. 48—180 C **9 Claims**



1. A supercharger for use with a carburetor for internal combustion engines characterized by its ability to dynamically retain the movement of carburetor air and provide mixing of the combustible mixture through generation of a vortex comprising, in combination, an elongated body having an axial center, an inlet end and an outlet end, a chamber defined at said outlet end, means defining a plurality of longitudinally extending passages in said body extending between said ends thereof, each of said means defining said passages having an inlet and an outlet adjacent said body inlet end and outlet end, respectively, means defined at said passages' inlets for imparting a vortex motion to air entering said passages, and discharge means defined at said passages' outlets for discharging

air from said passages into said chamber at an angle to said body axial center to create a vortex within said chamber concentric to said body axial center.

3,849,087
PROCESS FOR PRODUCING GASES BY THE CONVERSION OF HYDROCARBONS
Tetsutaro Arakawa, Tokyo, and Michio Oka, Yokohama, both of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan
Filed Feb. 15, 1973, Ser. No. 332,837
Int. Cl. C01b *2/16*
U.S. Cl. 48—214 **29 Claims**

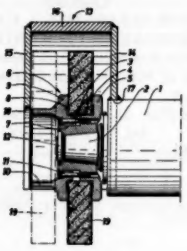
1. A process of producing a mixed gas which comprises cracking a hydrocarbon or hydrocarbons with at least one of steam and carbon dioxide in the presence of a catalyst consisting essentially of

a. nickel,

b. at least one of vanadium and molybdenum, and

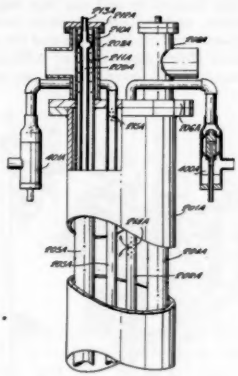
c. a heat resistant carrier.

3,849,088
SAFETY HOOD FOR GRINDING DISCS
Bengt Johansson, Hisings Backa, Sweden, assignor to Centro-Maskin i Goteborg AB, Goteborg, Sweden
Filed Feb. 14, 1973, Ser. No. 332,421
Claims priority, application Sweden, Feb. 14, 1972, 1745/72
Int. Cl. B24b *55/04*
U.S. Cl. 51—269 **1 Claim**



1. A grinding disc safety device comprising a grinding disc, which is intended for grinding with its peripherical part, a driven spindle nose, a flange piece being detachably mounted on said spindle nose, means detachably connecting said flange piece to said spindle nose, a safety hood enclosing a portion of said grinding disc, said safety hood having side walls with an opening therebetween with said disc projecting through said opening so that a segment of said disc is exposed, and said safety hood having a second opening in one side wall thereof, which is right in front of a side of said grinding disc, said second opening being arranged for rendering said flange piece and said connecting means accessible for mounting and demounting, said flange piece having a cylindrical projection, the outer diameter of which closely fits to the edges of said second opening, and the outer end of which closely fits to said side wall of said safety hood, said side wall being at a distance from the end of said spindle nose, which is at least as great as the width of said grinding disc, so that said grinding disc can be introduced into said safety hood through said first mentioned opening out side of said spindle nose in order to be mounted on the same.

3,849,089
PROCESS, SYSTEM AND APPARATUS AND COMPONENTS THEREOF FOR THE SEPARATION OF GASEOUS COMPONENTS
Robert A. Ritter, and David G. Turnbull, both of Calgary, Canada, assignors to Ritter Engineering Ltd., Alberta, Canada
Filed Jan. 4, 1973, Ser. No. 320,433
Claims priority, application Canada, Sept. 28, 1972, 152760
Int. Cl. B01d *53/04*
U.S. Cl. 55—33 **51 Claims**

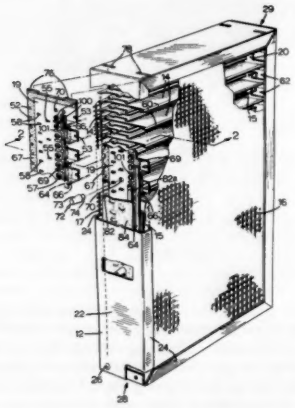


1. A cyclic process for separating and recovering one selected gas from a mixture of at least two gases, which process comprises: preferentially adsorbing one gas from the gas mixture by passing the gas mixture, while under a positive pressure condition of up to 60 p.s.i.g., in a lengthwise direction through an elongated first adsorption zone having a length/width ratio greater than one, said first adsorption zone containing an adsorbent material which is more selective to one gas than to said selected gas in that gaseous mixture, the adsorption zone also including primary inlet means and primary outlet means; causing the gas mixture to travel a relatively long adsorption path along the length of the first adsorption zone from the inlet means, through the adsorbent and out the primary outlet means; withdrawing said selected gas, which is less strongly adsorbed, from said adsorption zone through a primary outlet zone, which is substantially free of adsorbent material; discontinuing the adsorption step; and, while said adsorbing step is discontinued, regenerating the adsorbent by positively urging the adsorbed gases to travel along a relatively short, direct, desorbing path transverse to the adsorption path to a first distinct zone substantially free of adsorbent, disposed within said adsorbent zone, said first distinct zone being disposed along the length of the first adsorption zone, and further being subjected to the influence of a subatmospheric gaseous pressure; removing said desorbed gas from said first distinct zone through a secondary outlet zone which is substantially free of adsorbent material; and cyclically repeating said adsorption-desorption steps.

3,849,090
ELECTROSTATIC PRECIPITATOR
Cassius D. Remick, Waterloo, Ontario, Canada, assignor to Electrohome Limited, North Kitchener, Ontario, Canada
Continuation-in-part of Ser. No. 190,211, Oct. 18, 1971, Pat. No. 3,727,380. This application Apr. 13, 1973, Ser. No. 351,010
Int. Cl. B03c *3/47, 3/12*
U.S. Cl. 55—143 **8 Claims**

1. In an electrostatic precipitator an improved arrangement for supporting and electrically connecting the collector plates

thereof comprising two spaced apart printed circuit boards, a plurality of collector plates stacked in spaced apart relationship one above the other and extending between said printed circuit boards and supported thereby, said printed circuit boards having a plurality of slots extending therethrough, said collector plates having tabs extending therefrom, said tabs extending into said slots, at least two bus bars adapted for connection to two terminals of a DC power supply at different DC potentials, one of said bus bars being on one of said printed circuit boards and the other of said bus bars also being on one of said printed circuit boards, every other one of said collector plates being electrically connected via at least certain of said tabs thereof to said one bus bar, a plurality of isolating resistors, said isolating resistors being electrically connected between said other bus bar and the remaining ones of said collector plates and being of sufficient magnitude, upon occurrence of an arc-over between two adjacent ones of



said collector plates, to inhibit discharge of the capacitors constituted by other adjacent pairs of collector plates via said arc-over, said isolating resistors being constituted by electrically resistive, resilient cement adhered to said printed circuit board carrying said other bus bar and electrically connecting said remaining ones of said collector plates via at least certain of said tabs thereof to said other bus bar, said certain tabs of said remaining collector plates extending through certain of said slots that are physically spaced apart from said other bus bar, whereby said electrically resistive, resilient cement bridges the spaces between said certain tabs of said remaining collector plates and said other bus bar, said electrically resistive, resilient cement also being adhered to said certain of said tabs of said remaining ones of said collector plates and extending over the slots through which the last-mentioned tabs extend and thereby inhibiting rattling of said last-mentioned tabs.

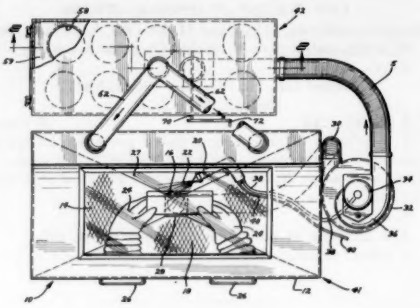
3,849,091

CLOSED LOOP AIR FILTRATION SYSTEM

Bertil G. Peterson, Bloomington, Minn., assignor to Tobin-Arp Manufacturing Company, South Minneapolis, Minn.

Filed Apr. 17, 1972, Ser. No. 244,691
Int. Cl. B01d *46/04*
U.S. Cl. 55—302 **4 Claims**

1. An airtight filter box including an airtight plenum across the top thereof, an airtight collection chamber across the bottom of said box and vertically below the plenum, an airtight filtration compartment between said collection chamber and said plenum, a plurality of vertical, porous filtration sleeves each open at an upper end to the inside of said plenum and at a lower end to the inside of said collection chamber and each extending through the filtration compartment, first conduit means extending into the plenum for introducing a stream of air to be filtered into the box, second conduit means extending outwardly from the plenum, a first collar extending from the plenum into the filtration compartment in spaced relation to said vertical sleeves, a second collar open to the inside of said plenum, valve means in said plenum between said conduit means and said collars, said valve means includ-



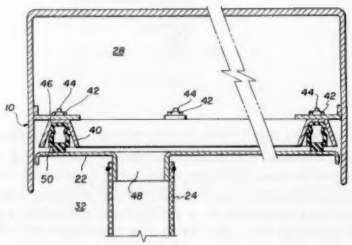
ing a valve element movable between a first position wherein said first conduit means discharges air to be filtered into said plenum through said second collar and said second conduit means receives filtered air from said filtration compartment through said first collar and a second position wherein said first conduit means discharges air into said filtration compartment through said first collar and said second conduit means receives air from said plenum through said second collar.

3,849,092

APPARATUS FOR SEPARATING A GASEOUS CARRIER FROM PARTICULATE MATTER ENTRAINED THEREIN

Even Bakke, New Providence, and Celestino G. Scapicchio, Newark, both of N.J., assignors to The Slick Corporation, New York, N.Y.

Filed Mar. 31, 1972, Ser. No. 240,180
Int. Cl. B01d *41/00*
U.S. Cl. 55—302 **3 Claims**



1. Dust collection apparatus for effecting separation of particulate matter from a gaseous carrier thereof, comprising a perimetric housing,

a tube sheet removably mounted therein operatively subdividing the interior of said housing into a clean air plenum and a dirty air plenum,

a plurality of elongate filter socks of permeable filter media disposed within said dirty air plenum for limiting the flow of gaseous carrier from said dirty plenum to said clean air plenum to passage therethrough, said filter socks being suspendedly mounted on said tube sheet and displaceable in conjunction therewith externally of said perimetric housing,

an inflatable hollow sealing means mounted on said perimetric housing and in spaced inflatably engageable relation with the periphery of said filter media supporting tube sheet when the latter is operatively mounted within said perimetric housing so as to permit unimpeded displacement of said tube sheet and filter media supported thereby externally of said housing when said sealing means is in uninflated condition,

a source of compressed air,

means for effecting removal of collected particulate matter from the surface of said filter media,

means for selectively introducing compressed air from said source into said sealing means to displace a portion thereof into continuous gas tight sealing relationship with the surface of said tube sheet when the latter and the filter media supported thereby are mounted within housing and to thereby limit the flow of gaseous carrier from the dirty air plenum to the clean air plenum to passage through said filter media,

ejector pump means responsive to a selective flow of released compressed air from said source therethrough to induce a flow of confined gaseous fluid from said sealing means and thereby positively reduce the pressure therein to a valve below that of ambient pressure and induce a collapse of said sealing means and a retraction thereof from engaged relation with said tube sheet,

and valve means for selectively effecting the introduction of said compressed air into said sealing means to inflate the same and the introduction of said compressed air into said ejector pump means for effecting positive deflation of said sealing means.

3,849,093

AIR CLEANER FOR AUTOMOBILES

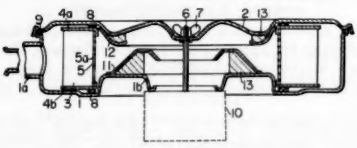
Masami Konishi, Toyota, and Kenji Hikita, Toyihashi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Sept. 15, 1972, Ser. No. 289,611

Claims priority, application Japan, Oct. 14, 1971, 46-94866

Int. Cl. B01d *50/00*

U.S. Cl. 55—316 **5 Claims**



1. An automotive air cleaner, including:

an annular air cleaning filter element;

housing means enclosing the filter element and including means sealing with the axially opposite ends of the filter element;

the housing means further including means defining an inlet thereto disposed radially outwardly of the filter element sealing means and means defining an outlet therefrom disposed generally centrally of the filter element and opening through the bottom of the housing radially inwardly of the sealing means, completing a passageway for air extending from said inlet, through the filter element and out the outlet;

wall means defining, when secured in said housing, a liquid-tight annular receptacle within said housing having a mouth opening radially inwardly surrounding said outlet and being disposed radially inwardly from the filter element;

means securing the receptacle wall means with respect to the housing for preventing said passageway from extending under the receptacle, whereby said passageway extends over the outside of the receptacle and down past the mouth thereof to reach said outlet, the receptacle being thereby positioned to trap liquid fuel escaping into the air cleaner through said outlet if and when the automotive vehicle incorporating the air cleaner turns on its side.

3,849,094

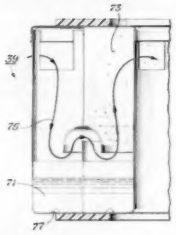
OIL BATH AIR FILTER ELEMENT

Will W. Holland, 1702 First St., Brownwood, Tex. 76801

Filed Mar. 5, 1974, Ser. No. 448,228

Int. Cl. B01d *50/00*

U.S. Cl. 55—330 **8 Claims**



1. An annular air filter element adapted to be inserted into an air filter bowl of a motor vehicle and to be removed therefrom for servicing, said bowl having a bottom end with a central aperture adapted to fit over the air intake of a carburetor, surrounding side walls with an air intake, and a removable top, said annular filter element comprising:

an annular container formed by bottom wall structure and inner and outer walls extending therefrom forming an annulus with an upper annular opening,

a removable annular top means adapted to fit over and close said opening,

said annular container being adapted to be inserted within said filter bowl between said central aperture and said surrounding walls and to be in sealing contact with the bottom of said bowl and its top when inserted in place,

said annular container having air inlet means formed through said outer wall near the upper end thereof and air outlet means formed through said inner wall near the upper end thereof to allow passage of air from the air intake of said bowl to said central aperture by way of said annular filter element,

an air direction changer means located in the annulus of said container for directing the air to make three 180° turns when flowing from said inlet means to said outlet means,

a quantity of oil or the like located in the bottom of said annular container, and

an air pervious filter medium located in the flow path of the air between said air direction changer and said outlet means.

3,849,095

LOUVER ARRANGEMENT FOR A LIQUID/GAS SEPARATOR

Ulrich Regehr, Susterfeld 65, 51 Aachen, Germany

Filed Sept. 25, 1972, Ser. No. 292,255

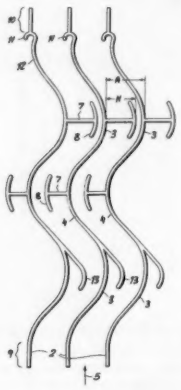
Claims priority, application Germany, Sept. 27, 1971, 2148079

Int. Cl. B01d *45/08*

U.S. Cl. 55—394 **3 Claims**

1. A deflection assembly for the inertial separation of a liquid from a gas comprising means forming a flow passage having a general direction of fluid flow between an inlet and an outlet; an array of geometrically identical parallel deflector

plates of generally undulate configuration and substantially sinusoidal cross-section mounted in said passage and transversely spaced apart by a distance A between corresponding points of successive plates to define respective flow paths between them, each plate having a side turned toward said inlet and extending generally parallel to said flow direction, each of said plates comprising a plurality of corrugation crests and a plurality of corrugation troughs; a respective web extending transversely from each crest of each of said plates toward a confronting other plate and into a trough thereof thereby obstructing the flow path therebetween; and an arcu-



ate cylinder-segment flange at an end of each of said webs remote from the plate and defining therewith a respective liquid collection trough open opposite to said flow direction, each segment having a curvature corresponding substantially to that of the trough in which it lies, said webs, flanges and crests running transversely to said flow direction, said flanges each lying at a height H from the plate upon which they are mounted and H is greater than 0.5 A, the difference between the heights of said liquid collection troughs and the width of said flow passage decreasing from liquid-collection trough to liquid-collection trough in said direction.

3,849,096

FRACTIONATING LNG UTILIZED AS REFRIGERANT UNDER VARYING LOADS

Ludwig Kniel, Scarsdale, N.Y., assignor to The Lummus Company, Bloomfield, N.J.

Continuation of Ser. No. 839,427, July 7, 1969, abandoned. This application Aug. 4, 1971, Ser. No. 168,838

Int. Cl. F25j *3/06*

U.S. Cl. 62—23 **2 Claims**

1. A process for the regasification and fractionation of liquefied natural gas, comprising:

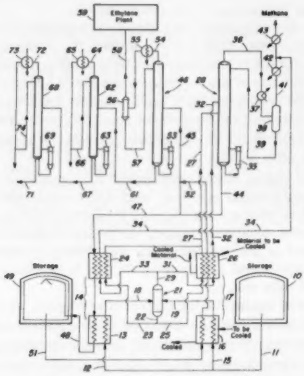
a. heating liquefied natural gas and recovering the cold potential therefrom;

b. introducing heated natural gas from step (a) into a demethanizer to recover a methane overhead and a bottoms of heavier components, said methane overhead recovery varying above and below a specific average amount;

c. introducing a first portion of the bottoms from the demethanizer into a deethanizer, said deethanizer being operated at a feed rate corresponding to the amount of bottoms available from the demethanizer at the specific average amount of methane overhead recovery, said first portion being the entire bottoms during periods when the methane overhead recovery is no greater than the specific average amount and when the methane overhead recovery is in excess of the specific average amount, said first portion being less than the entire bottoms and corresponding to the bottoms available when the methane overhead recovery is at the specific average amount;

d. cooling the remaining portion of the bottoms available during a period when the methane overhead recovery is greater than the specific average amount by indirect heat transfer with liquefied natural gas;

e. passing the cooled remaining portion of bottoms to a storage zone;



f. withdrawing remaining portion of bottoms from said storage zone during periods when the methane overhead recovery is less than the specific average amount at a rate corresponding to that required to maintain the feed rate to the deethanizer;

g. heating the withdrawn remaining portion of bottoms and recovering the cold potential therefrom; and

h. introducing the heated remaining portion of bottoms into the deethanizer to maintain said feed rate to the deethanizer.

3,849,097

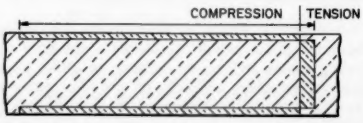
METHOD FOR CONTINUOUSLY HOT FORMING STRONG LAMINATED BODIES

James W. Giffen; David A. Duke, both of Corning; William H. Dumbaugh, Jr., Painted Post; James E. Flannery, Corning; John F. MacDowell, Painted Post, and John E. Megles, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 78,763, Oct. 7, 1970, Pat. No. 3,673,049, which is a continuation-in-part of Ser. No. 735,044, June 6, 1968, abandoned. This application Mar. 27, 1972, Ser. No. 238,118

Int. Cl. C03b *27/00*; **B32b** *7/02*

U.S. Cl. 65—33 **16 Claims**



1. A method for continuously hot-forming a strong laminated glass article consisting of a tensilely-stressed core portion and a compressively-stressed surface layer fused thereto and substantially enveloping said core portion such that the fused glass surface between said core portion and said surface layer is essentially defect-free and wherein the coefficient of thermal expansion of said surface layer at the setting point is at least about 15×10^{-7}/°C. less than the coefficient of thermal expansion of said core portion which comprises the steps of:

a. melting a glass forming batch for each said core portion and said surface layer;

b. essentially simultaneously bringing said molten batches together while in the fluid state and combining them into a laminated glass article at an elevated temperature such that said core portion has a viscosity greater than and up to six times greater than said surface layer and fusing said core portion and surface layer together such that an interface therebetween is essentially defect-free.

3,849,098

DEVICE FOR MANUFACTURING DOUBLE LAYER SHEET GLASS

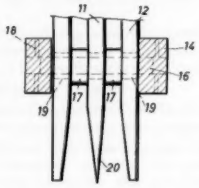
Hans-Jurgen Wortmann, Bochum-Lgdr, Germany, assignor to Flachglas Aktiengesellschaft Delog-Detag, Furth/Bayern, Germany

Filed Sept. 12, 1973, Ser. No. 396,456

Claims priority, application Germany, Sept. 14, 1972, 7233864; Oct. 7, 1972, 2249284

Int. Cl. C03b *23/24*

U.S. Cl. 65—152 **23 Claims**



1. Device for manufacturing double layer sheet glass by fusing the horizontal cross edges and vertical longitudinal edges of paired, oppositely parallel-spaced single layer sheets supported on a lower guide means and vertically guided through a processing oven by means of an upper guide means, at least one of the two guide means for the glass sheets consisting of individually independent elongated segments, whereby each guide segment exhibits three track-like guide elements disposed in a substantially horizontal plane in oppositely parallel spacing relative to one another.

3,849,099

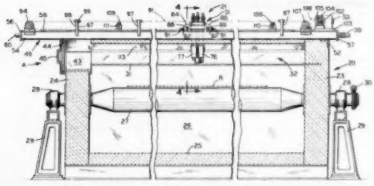
SCANNING APPARATUS FOR MEASURING GLASS TEMPERATURES

Robert E. Maltby, Jr., Perrysburg, and Thomas B. O'Connell, Maumee, both of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Nov. 15, 1973, Ser. No. 416,168

Int. Cl. C03b *25/04*

U.S. Cl. 65—158 **10 Claims**



1. In a scanning apparatus for observing the temperature profile across an article as it is conveyed through a lehr, including a roof in said lehr and a pyrometer for observing said temperature profile, the improvement comprising:

a. a transversely elongated passageway extending through said roof;

b. a frame mounted on said roof adjacent said passageway;

c. pyrometer support means projecting into said passageway and movably mounted on said frame for reciprocation along the elongation of said passageway; and

d. closure means for continuously sealing said support means in said passageway as said support means is moved therealong.

3,849,100

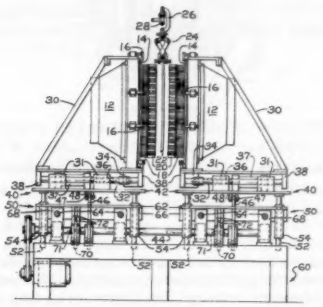
TEMPERING GLASS SHEETS

Antonio Luppino, Willard, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 24, 1972, Ser. No. 299,970

Int. Cl. C03b *27/00*

U.S. Cl. 65—348 **3 Claims**



1. Apparatus for cooling glass sheets comprising a pair of plenum chambers, each having an inward facing, apertured wall facing an inward facing, apertured wall of said other plenum chamber in spaced relation thereto, means for supporting a glass sheet between said apertured walls in a given plane, means for imparting tempering medium under pressure to said plenum chambers for delivery through said apertured walls against the opposite surfaces of a heated glass sheet located therebetween, first means for supporting said plenum chambers for reciprocation in unison in planes substantially parallel to said given plane in a horizontal direction, second means for supporting said plenum chambers for reciprocation in unison in said substantially parallel planes in a vertical direction, drive means, means to selectively couple said drive means to said first support means to reciprocate said plenum chambers in unison in said horizontal direction, means to selectively couple said drive means to said second support means to reciprocate said plenum chambers in unison in said vertical direction, and means for operatively interconnecting said first and second support means to move said plenum chambers in unison in closed orbital paths when said drive means is selectively coupled by each of said coupling means to its respective said support means.

3,849,101

COOLING SYSTEM FOR GLASS FORMING MOLD

Frederick Joseph Wythe, Hebron, and George Dudley Mylchreest, Simsbury, both of Conn., assignors to Emhart Corporation, Bloomfield, Conn.

Filed Nov. 6, 1972, Ser. No. 304,207

Int. Cl. C03b *9/38*

U.S. Cl. 65—355 **11 Claims**

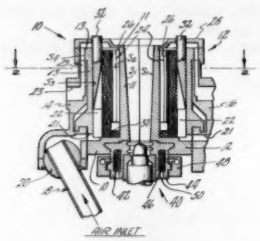
1. In a glassware forming machine the improvement comprising:

a. a cast iron mold cavity defining structure including inner wall means defining a glassware forming first surface which is adapted to contact the molten glass material and

to remove heat therefrom, and said inner wall means defining a second cast iron surface spaced from the first so that heat is adapted to be conducted from said first surface generally toward said second surface,

b. outer wall means spaced from said inner wall means and defining a third surface spaced from said second surface, and an internal chamber between said second and third surfaces;

c. a porous metal filler material in said chamber and comprising generally spherical metallic particles which have been brazed to one another for improved heat conduction



between the particles, and defining interstices between adjacent particles for preserving the porosity of said filler,

d. said metallic particles being brazed to said second cast iron surface by the same metallic brazing alloy used to braze said particles to one another so as to not only improve the heat conduction between the particles, but also between the particles and said cast iron inner wall means;

e. and means defining a fluid inlet and an outlet opening for passing a coolant fluid through said interstices in said porous metal filler material to cool the particles and in turn to cool the inner wall means which defines said glassware forming first surface.

3,849,102

PLANT GROWTH REGULANT METHOD

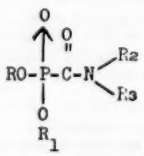
Harry C. Bucha, and William P. Langsdorf, Jr., both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 850,220, Aug. 14, 1969, abandoned. This application May 18, 1972, Ser. No. 254,670

Int. Cl. A01n

U.S. Cl. 71—76 **10 Claims**

1. A method for retarding the growth rate of plants while causing little or no apparent damage to the plants which comprises applying to said plant a growth retardant effective amount of a compound of the formula



where

R is selected from the group consisting of alkyl of one through eight carbon atoms, chloroalkyl of two through eight carbon atoms containing up to three chlorine atoms, bromoalkyl of two through eight carbon atoms containing up to three bromine atoms, alkoxyalkyl of three through ten carbon atoms, total, alkenyl of two through eight carbon atoms, alkynyl of three through four carbon atoms, phenyl or benzyl;

R_1 is selected from the group consisting of alkyl of one through eight carbon atoms, chloroalkyl of two through eight carbon atoms containing up to three chlorine atoms, bromoalkyl of two through eight carbon atoms containing up to three bromine atoms, alkoxyalkyl of three through ten carbon atoms, total, alkenyl of two through eight carbon atoms, alkynyl of three through four carbon atoms, phenyl or benzyl;

R_2 is selected from the group consisting of hydrogen, alkyl of one through four carbon atoms, hydroxyalkyl of two through four carbon atoms, alkenyl of three through four carbon atoms or alkylnyl of three through four carbon atoms;

R_3 is selected from the group consisting of hydrogen, alkyl of one through four carbon atoms, hydroxyalkyl of two through four carbon atoms, alkenyl of three through four carbon atoms or alkynyl of three through four carbon atoms;

R_2 and R_3 can be taken together to form a bridge consisting of $-(CH_2)_2-O-(CH_2)_2-$ or $-(CH_2)_n-$ where n is 4, 5 or 6; and one of R_2 or R_3 can be

where

R_4 is hydrogen or alkyl of one through four carbon atoms and

R_5 is hydrogen or alkyl of one through four carbon atoms.

3,849,103

PLANT FOODS

Frederick John Harris, and John Stewart Raitt, both of Edinburgh, Scotland, assignors to Scottish Agriculture Industries Limited, Edinburgh, Scotland

Division of Ser. No. 807,908, March 17, 1969, Pat. No. 3,733,192. This application Oct. 30, 1972, Ser. No. 301,770

Claims priority, application Great Britain, Mar. 28, 1968, 14966/68; Apr. 29, 1968, 20217/68

Int. Cl. A01n *21/02, 9/36*

U.S. Cl. 71—77 **15 Claims**

1. A process of enhancing plant growth which comprises applying to crop plants, in an amount effective to enhance the yield of the crop by action on the plant metabolism, a compound selected from the group consisting of

1. compounds of formula:

wherein X is selected from the group consisting of oxygen and sulphur; W is selected from the group consisting of C_2–C_{10} alkyl and the 4,6 bisphosphonyl-2-s-triazinyl radical; Y is selected from the group consisting of hydroxy, amino and a radical defined for W; and Z is selected from the group consisting of hydroxyl and amino; and

2. non phytotoxic salts and esters thereof.

3,849,104

CONTROL OF AESCHYNOMENE SP. WITH COLLETROTRICHUM GLOEOSPORIOIDES PENZ. F. SP. AESCHYNOMENE

James T. Daniel; George E. Templeton, both of Fayetteville, and Roy J. Smith, Jr., Stuttgart, all of Ark., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 17, 1973, Ser. No. 351,934
Int. Cl. A01n 9/00
U.S. Cl. 71—65 1 Claim

1. A process for controlling northern jointvetch weeds comprising inoculating the weed with an amount of the fungus *Colletotrichum gloeosporioides* f. sp. *aeschynomene* sufficient to infect and kill the weed.

3,849,105

GRANULAR PESTICIDE

Verle W. Woods, P.O. Box 1016, Yakima, Wash. 98901

Continuation-in-part of Ser. No. 629,102, April 7, 1967, abandoned. This application Jan. 21, 1970, Ser. No. 4,771
Int. Cl. A01n 19/00, 5/00
U.S. Cl. 71—65 6 Claims

1. A method of producing a granular pesticide formulation from an oleaginous suspension of a solid, water-insoluble pesticide dispersed in a continuous water phase, said method comprising the following steps:

spraying the suspension onto the surfaces of a free-flowing granular water-absorbent carrier substance that is inert to the pesticide and suspension components and that is adequately absorbent to cause the surface suspension sprayed thereon to invert, said spraying being accomplished while subjecting the granular carrier substance to a tumbling action;

and terminatng the tumbling of the granular carrier substance after spraying of the suspension thereon, permitting the sprayed granular carrier substance to cure at rest during absorption of the suspension components, whereby the suspension remaining on the sprayed surfaces of the granular carrier substance inverts.

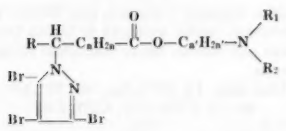
3,849,106

HERBICIDAL COMPOSITION AND METHOD

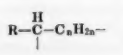
Gabriel Kornis; Arnolds Steinhards; Eldon George Nidy, and Henry J. Vostral, all of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 4, 1970, Ser. No. 16,577
Int. Cl. A01n 9/22
U.S. Cl. 71—92 6 Claims

1. The method of controlling weeds and regulating the growth of plants which comprises applying to a situs and to growing plants a herbicidally effective and growth regulatory amount of a 2-(dialkylamino)-alkyl ester of a 3,4,5-tribromopyrazole-1-alkanoic acid of the formula:



wherein *n* is an integer 0, 1, 2, or 3; *R* is hydrogen, alkyl of from one to 10 carbon atoms, inclusive; the sum of the carbon atoms in the group



being not more than 11; $-C_{n'}H_{2n'}-$ is alkylene of from two to eight carbon atoms, inclusive (n' being an integer from two to eight, inclusive); and R_1 and R_2 are lower-alkyl of from one to eight carbon atoms, inclusive.

3,849,107

HERBICIDE

Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/-Rhine, Germany

Filed July 13, 1971, Ser. No. 162,317
Claims priority, application Germany, July 28, 1970, 2037265
Int. Cl. A01n 9/22
U.S. Cl. 71—92 1 Claim

1. A process for controlling the growth of unwanted plants which comprises applying a phytotoxic amount of a mixture of (a) N-propyl-N- -chloroethyl-2,6-dinitro-4-trifluoromethylaniline and (b) 1-phenyl-4-amino-5-chloropyridazone-(6), the weight ratio of a:b being in the range of 1:3 to 3:1.

3,849,108

METHOD OF RETARDING THE REGROWTH ON TREES

Richard W. Fields, Geneva, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed May 5, 1972, Ser. No. 250,555
Int. Cl. A01n 9/00
U.S. Cl. 71—88 10 Claims

1. A method of retarding the regrowth of shoots in the vicinity of cut branches on trees which comprises applying to the cut surface of said tree a solution containing from about 0.005 to about 0.5 weight percent of a compound selected from the group consisting of 2-methoxy-3,6-dichlorobenzoic acid, sodium 2-methoxy-3,6-dichlorobenzoate, potassium 2-methoxy-3,6-dichlorobenzoate, furfuryl 2-methoxy-3,6-dichlorobenzoate and amine salts of 2-methoxy-3,6-dichlorobenzoic acid.

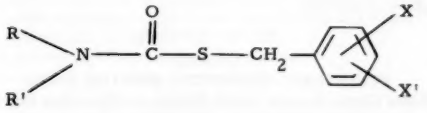
3,849,109

MIXED HERBICIDE COMPOSITION

Yoshiro Kato, Fukuoka, and Masaru Kado, Kanagawa, both of Japan, assignors to Mitsui Toatsu Chemicals Inc. and Kumiai Chemical Industry Co., Ltd., both of Tokyo, Japan

Filed Apr. 24, 1970, Ser. No. 31,777
Claims priority, application Japan, Apr. 24, 1969, 44-31282
Int. Cl. A01n 9/12
U.S. Cl. 71—100 10 Claims

1. A mixed herbicide composition which comprises as an active ingredient, a herbicidal effective amount of a mixture of a thiocarbamate compound of the formula:



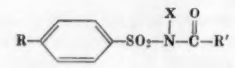
wherein R and R′ each represent a member selected from the group consisting of a C_1—C_4 alkyl group or R and R′ are each a propenyl group or R and R′ form a member selected from the group consisting of a piperidine ring and a morpholine ring together with a nitrogen atom; X and X′ each represent a member selected from the group consisting of a hydrogen atom, a halogen atom, a methyl group and a C_1—C_2 alkoxy group; and either 4-nitro-2′, 4′, 6-trichlorodiphenyl ether or 4-nitro-2′, 4′-dichloro-6′-fluorodiphenyl ether; and an inert carrier, the thiocarbamate and ether compounds being present in a weight ratio of from 0.3 – 3:1.0.

3,849,110
HERBICIDAL METHOD EMPLOYING ARYL-SULFONYLUREAS OR SALTS THEREOF

Quentin F. Soper, and Granville B. Kline, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 7, 1963, Ser. No. 249,581
Int. Cl. A01n *9/14*
U.S. Cl. 71—103 **11 Claims**

1. A method for inhibiting the growth of germinating grass seeds and of seedling grasses which comprises applying to a locus of said seeds and seedlings an effective amount of a compound having the following formula:



wherein R is a member of the group consisting of $-NO_2$, $-NH_2$, and $-NHCOR''$; R′ is a member of the group consisting of, amino, C_1–C_6 alkylamino, di(C_1–C_6 alkyl)amino, monocyclic arylamino, substituted monocyclic arylamino, and N-(C_1–C_6 alkyl)-N-monocyclic arylamino; R″ is a member of the group consisting of C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_2–C_4 alkenyl, and C_2–C_4 haloalkenyl; and X is a member of the group consisting of hydrogen, the alkali metals, the alkaline earth metals and ammonium. C_1 – C_4 lower-alkyl substituted ammoniums.

3,849,111
METHOD FOR PURIFYING AND AGGLOMERATING PYRITE CINDERS

Per Gudmar Kihlstedt, Bromma, Sweden, assignor to AB Cold Bound Pellets, Djursholm, Sweden

Filed Dec. 16, 1969, Ser. No. 885,613
Claims priority, application Sweden, Dec. 20, 1968, 17612/68
Int. Cl. C21b *1/24;* **C22b** *1/00*
U.S. Cl. 75—2 **12 Claims**

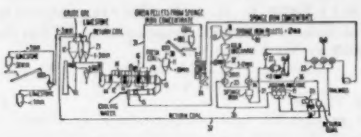
1. A method for purifying and agglomerating pyrite cinders, comprising (**1**) grinding the pyrite cinders, (in at least one grinding operation) (**2**) removing sulphide material from the ground pyrite cinders by flotation, (**3**) forming an aqueous mixture containing the ground and purified pyrite cinders and a binding agent comprising slaked lime, finely ground and slaked steel furnace slag, Portland cement, finely-divided silica, finely divided silicate containing material or mixtures thereof, (**4**) agglomerating the mixture and (**5**) heating the agglomerates for **1** to **24** hours in an atmosphere consisting essentially of steam, at a temperature of approximately **160°** – **230°**C and a pressure of approximately **10** – **70** atmospheres above atmospheric.

3,849,112
PELLETISING HAEMATITE IRON ORE FINES

Asoka Gupta, Burnpur, India, assignor to The Indian Iron & Steel Company Limited, Calcutta, Ind.

Continuation of Ser. No. 712,402, March 12, 1968, abandoned. This application Apr. 13, 1971, Ser. No. 133,748
Int. Cl. C21b *1/24*
U.S. Cl. 75—3 **4 Claims**

1. A process for treating iron ore to produce a sponge-iron agglomerate, comprising reducing iron ore in a rotary kiln in the presence of solid carbon, separating a sponge-iron product from the reduced ore product discharged from the kiln, grinding the sponge-iron product, magnetically separating a ground concentrate consisting essentially of sponge-iron from the ground product, adding to the sponge-iron concentrate additives consisting essentially of hydrated lime and water, said hydrated lime and water being present in an amount effective to permit pelletization of said concentrate with the hydrated lime the binder for the pellets, agglomerating by rolling same



into pellets consisting essentially of sponge-iron concentrate and hydrated lime and water, and heating the pellets to harden same, the weight percent of the composition of the pellets prior to heating being about as follows:

concentrate	81.1%
hydrated lime	8.9%
total water	10.0%.

3,849,113
PROCESS FOR THE PRODUCTION OF CRUDE FERRONICKEL

Thomas E. Ban, South Euclid, Ohio, assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio

Filed June 12, 1973, Ser. No. 369,169
Int. Cl. C22b *1/24*
U.S. Cl. 75—3 **1 Claim**

1. A process for producing crude ferronickel from lateritic ore comprising:

1. forming moist pellets ⅜ inch to ¾ inch in diameter and consisting of uniformly blended finely divided lateritic ore and finely divided solid carbonaceous fuel, the amount of said fuel being only slightly more than stoichiometrically required to reduce the nickeliferous moiety of the ore;
2. charging moist pellets to a traveling grate to a bed depth of from 6 – 12 inches;
3. drying said pellets by passing hot oxygen-depleted gas at 400° – 800°F through the bed at a rate of 250 – 400 SCFM/sq. ft. of grate area for a period of time sufficient to reduce the moisture content to no more than about 3 percent by weight;
4. firing said dried pellets with hot oxygen-depleted gas at 1,500° – 2,400°F for 15 – 40 minutes at a rate of 100 – **250** SCFM/sq. ft. of grate area to yield hot oxide-containing pellets in which at least 95 percent of the Ni is reduced to metal;
5. charging the hot pellets to an electric arc furnace to separate the metal from the oxide constituents.

3,849,114
PROCESS FOR PRODUCING HIGH CARBON FERROCHROME

Toyozi Yoshida; Kazuhisa Ushiyama, and Minoru Yamanaka, all of Tokuyama, Japan, assignors to Showa Denko Kabushiki Kaisha and Shunan Denko Kabushiki Kaisha, both of Tokyo, Japan

Filed Sept. 14, 1973, Ser. No. 397,359
Int. Cl. C22b *1/14;* **C21b** *1/08*
U.S. Cl. 75—3 **2 Claims**

1. A process for producing high carbon ferrochrome which comprises feeding continuously to an electric-arc furnace a charge mixture consisting of sintered pellets obtained by the reductive calcination of chrome ores, said pellets being those in which about 80 – 50 mol percent of the total content of the oxygen combined with iron and chromium components has been removed and the two components are in the acid-soluble from and about 20 – 50 mol percent, without having been removed and the two components remain in the form of acid-

insoluble oxides, and containing substantially no free carbon, and a granular carbonaceous reducing material of particle sizes not greater than 100 mm, at least 70 percent by weight thereof being of sizes in the range of about 20 – 100 mm, said carbonaceous material being fed in an amount equal to 0.7 – 1.4 times the stoichiometric amount required to reduce the oxides of iron and chromium remaining in said pellets to Fe_7C_3 and Cr_7C_3, respectively; and thereafter submitting said charge mixture in said electric-arc furnace continuously to a submerged electric-arc smelting operation to form the high carbon ferrochrome.

3,849,115

SINTERING PROCESS

Thomas Eugene Ban, South Euclid, Ohio, assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio

Filed Mar. 24, 1972, Ser. No. 237,660
Int. Cl. C21b *1/10*; C22b *1/16*
U.S. Cl. 75—5 **8 Claims**

1. A process for sintering a burden of particles on a traveling grate which traverses a sintering zone and a cooling zone on the same strand, said burden comprising iron oxide, combustible carbonaceous material and water, said process comprising the steps of:

a. igniting the said iron oxide burden containing the water with a flame and moving the ignited burden into the sintering zone;

b. passing recycle oxygen-rich exhaust gas from the cooling zone through the burden to effect sintering of the ignited iron oxide burden in the sintering zone and to produce a relatively cold humid sinter exhaust gas;

c. moving said iron oxide burden from the sintering zone into the cooling zone;

d. recycling at least a portion of said relatively colder sinter exhaust gas through said burden at a downstream point to partially cool the sintered iron oxide; and burden to complete sintering and to relieve the gases of entrained combustible matter;

e. passing oxygen-rich gas through said iron oxide burden to further cool said burden, to increase the temperature of said gas and to yield an oxygen-rich recycle gas for recycling to said sintering zone.

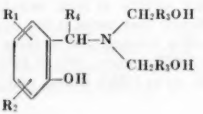
3,849,116

BORON BINDING PLANT GROWTH AGENTS

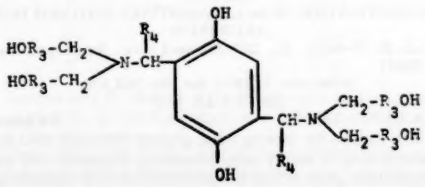
Ronald Swidler, and Harris M. Benedict, both of Pasadena, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed July 23, 1971, Ser. No. 165,750
Int. Cl. A01n
U.S. Cl. 71—76 **7 Claims**

1. A method of dwarfing the growth of plants comprising the step of applying to the plants an effective amount of a compound of the formulae:



and



where R_4 is selected from hydrogen and lower alkyl of 1 to 10 carbon atoms; R_3 is selected from methylene, ethylene and

R_2 is selected from hydrogen, hydroxyl, halogen, alkyl, aryl, haloaryl, alkoxy, haloalkyl, carboxyl and p-hydroxydimethylbenzyl; R_1 is selected from hydrogen, hydroxyl and alkyl and R_1 and R_2 when joined together and taken with the benzene ring form naphthalene.

3,849,117

TREATMENT OF SLAGS COVERING MOLTEN METALS

Andrew Philpotts, Nechells, England, assignor to Foseco International Limited, Birmingham, England

Continuation of Ser. No. 861,476, Sept. 26, 1969, abandoned. This application May 22, 1972, Ser. No. 255,378
Claims priority, application Great Britain, Oct. 7, 1968, 47471/68
Int. Cl. C21b *3/04*; C21c *7/00*; C22b *9/10*
U.S. Cl. 75—24 **9 Claims**

1. In a process for separating slag covering molten metal from the molten metal, the improvement comprising incorporating in said slag an additive consisting essentially of pumice in an amount to coagulate and sufficiently thicken said slag into a semi-solid mass capable of being separated from the molten metal without any significant inclusion of the slag therein and thereafter separating the resultant thickened and coagulated, semi-solid slag from the surface of the metal.

3,849,118

PRODUCTION OF MAGNESIUM METAL

William A. Mod, Lake Jackson, and James H. Enos, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 660,217, Aug. 14, 1967, abandoned. This application June 15, 1970, Ser. No. 48,880
Int. Cl. C22b *45/00*
U.S. Cl. 75—67 **5 Claims**

1. A process for preparing magnesium metal which comprises:

a. contacting at atmospheric pressure a magnesium halide compound with lime and a reducing agent selected from the group consisting of aluminum, aluminum-silicon compounds, aluminum silicides and mixtures thereof, at a temperature within a range of from about 700°C to about 1100°C for a sufficient period of time to reduce at least a portion of the magnesium halide to form molten magnesium metal, said lime being provided in an amount which at the minimum is stoichiometrically required to react with substantially all halides released from said magnesium halide during the reaction, and

b. recovering said molten magnesium metal.

3,849,119

TREATMENT OF MOLTEN ALUMINUM WITH AN IMPELLER

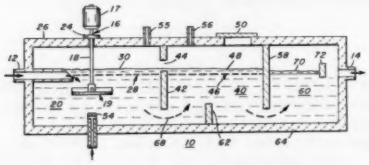
Marshall J. Bruno, Greensburg; Noel Jarrett, Lower Burrell, and Burl L. Slaugenhaupt, Apollo, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 195,772, Nov. 4, 1971, Pat. No. 3,767,382. This application July 5, 1973, Ser. No. 376,703The portion of the term of this patent subsequent to Sept. 23, 1990, has been disclaimed.
Int. Cl. C22b *21/06*
U.S. Cl. 75—68 R **30 Claims**

1. A continuous method of treating molten aluminum containing one or more of the metallic impurities from the group

of the elements Sr, Li, K and Ca to decrease its content of oxide inclusions, hydrogen gas and one or more of said metallic impurities comprising the steps

a. continuously introducing said molten aluminum containing said metallic impurities into an agitated zone maintained by the action of a submerged rotating vaned impeller and containing a mixture of said molten aluminum and a reactive salt flux containing magnesium chloride, said molten aluminum being introduced substantially into the rotating impeller,



b. continuously moving a mixture comprising said molten aluminum and salt flux from said agitated zone to a separate quiet zone to substantially separate molten aluminum from the remainder of said mixture which remainder rises to form a floating salt flux-oxide layer above the separated molten aluminum,

c. recirculating salt flux from said floating salt flux-oxide layer in said quiet separation zone to said agitated zone, and maintaining in said recirculated salt flux a maximum oxide content of 20 weight percent,

d. removing a purified molten aluminum product containing reduced amounts of said metallic impurities.

3,849,120

SMELTING OF COPPER-IRON OR NICKEL-IRON SULFIDES

Telfer E. Norman, 37 Hillside Dr., Denver, Colo. 80215

Filed June 25, 1973, Ser. No. 373,471

Int. Cl. C22b *15/00*

U.S. Cl. 75—74 **14 Claims**

1. A process of smelting ore concentrates containing copper and iron sulfides or nickel and iron sulfides which comprises:

a. introducing said concentrates into a refractory lined smelting chamber, together with a siliceous flux, for smelting said concentrates and flux to a matte and slag at temperatures of 1,200° to 1,400°C;

b. controlling the rates of introduction of said concentrates and flux into said smelting chamber so that, after smelting, an iron silicate type slag containing between 25 and 40 percent SiO_2 is produced;

c. introducing a mixture of carbonaceous or hydrocarbon fuel, steam and an oxidizing gas containing about 50 to 95 percent free oxygen into said smelting chamber to provide the heat required for smelting, by combustion of said fuel with said oxidizing gas and to provide H_2O gas for chemical reaction above 700°C with iron sulfides in said concentrates and to provide an excess of said oxidizing gas over that required for complete combustion with said fuel;

d. controlling the relative rates at which said concentrates and flux and said mixture of fuel, steam and oxidizing gas are introduced into said chamber so that smelting temperatures of 1,200° to 1,400°C are attained and molten matte and slag at temperatures of about 1,200° to 1,400°C are produced;

e. so controlling the rate at which the steam in said mixture of fuel, steam and oxidizing gas is introduced into said chamber that the concentration of H_2O gas, in the mixed gases coming into reactive contact with said concentrates, is sufficient to react with one-quarter to two-thirds of the iron sulfides in said concentrates to produce iron oxides and H_2S;

f. so controlling the relative proportions of said excess of oxidizing gas in said mixture of fuel, steam and oxidizing gas that a chemical balance, within practical limits, of one mole of SO_2 for each two moles of H_2S is obtained in the exit gases from said chamber;

g. removing the mixed gases formed by or supplied to the smelting and combustion reactions, including S_2, H_2S, SO_2, CO_2, H_2O and N_2, from said chamber and cooling said gases to temperatures below the boiling point of elemental sulfur or below about 445°C, to permit the H_2S and SO_2 to react to produce elemental sulfur and water vapor; and

h. collecting said molten matte and slag on a hearth at the bottom of said smelting chamber, permitting said matte and slag to form a pool consisting of separate layers of matte and slag and withdrawing said matte and slag through suitably placed tapholes.

3,849,121

ZINC OXIDE RECOVERY PROCESS

W. Herbert Burrows, 2518 Boxewood Ct. N.E., Atlanta, Ga. 30345

Filed Nov. 30, 1971, Ser. No. 203,462

Int. Cl. C22b *3/00*

U.S. Cl. 75—103 **10 Claims**

1. A method for the selective recovery of various components from electric furnace flue dust which contains the oxides of zinc, iron, lead and copper, comprising the steps of:

a. treating said flue dust with an ammonium chloride solution maintained at an elevated temperature to form a solution comprising zinc chloride salt, a copper-ammonium complex, and lead chloride salt;

b. separating said solution from the undissolved iron oxide;

c. adding zinc metal to said solution whereby the copper and lead ions are displaced by said zinc and precipitate out of said solution as copper and lead metals; and,

d. lowering the temperature of said solution whereby the zinc component is precipitated therefrom as zinc oxide.

3,849,122

STAINLESS IRON BASE ALLOY METAL-TO-METAL HIGH SPEED SEALS

Glenn R. Gobble, and Richard G. Loebs, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 299,103, Oct. 19, 1972,. This application Mar. 22, 1974, Ser. No. 453,846

Int. Cl. C22c *39/14*

U.S. Cl. 75—126 A **2 Claims**

1. In stainless iron base metal-to-metal high speed seal constructions that include at least two face-to-face metal surfaces and wherein said surfaces are movable relative to each other, an alloy forming said surfaces consisting essentially of **3.1%** to **3.65%** carbon, **24%** to **27%** chromium, up to **0.9%** manganese, up to **1.50%** silicon, and the balance iron.

3,849,123

INCORPORATION OF SOLID ADDITIVES INTO MOLTEN ALUMINUM

Earle R. Webster, Jr., 213 Harvard Ave., Palmerton, Pa. 18071

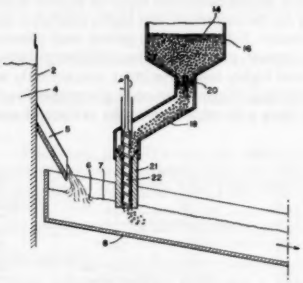
Filed Nov. 7, 1972, Ser. No. 304,330

Int. Cl. C22c *1/06*

U.S. Cl. 75—138 **8 Claims**

1. A method for forming a fine grained aluminum solid by incorporating a master alloy containing aluminum and an intermetallic grain refiner into an aluminum melt comprising

forming a stream of the aluminum melt and adding thereto beneath the surface of said stream said master alloy in the form of small particles and thereafter solidifying said aluminum melt, and wherein said particles are prepared by quickly



chilling an atomized liquid solution of a master alloy containing aluminum and an intermetallic grain refiner, thereby providing particles, each of which contain many minute particles of the grain refiner carried in an aluminum matrix.

3,849,124

CAPACITOR POWDER

Gerard J. Villani, Needham, Mass., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 882,482, Dec. 5, 1969, Pat. No. 3,597,664. This application July 26, 1971, Ser. No. 166,220The portion of the term of this patent subsequent to Aug. 10, 1988, has been disclaimed.

Int. Cl. C22c *15/00*

U.S. Cl. 75—177 **6 Claims**

1. A powdered material of niobium-zirconium-titanium ternary alloy, in form suitable for manufacture into an electrolytic capacitor anode, the alloy having an essentially homogeneous crystal structure of a single body centered cubic alloy phase wherein the elements of the alloy are present in atomic percentages of from:

20 to 40% for niobium
30 to 60% for zirconium
20 to 40% for titanium.

3,849,125

METHOD OF SULPHUR ADDITION FUME CONTROL

William F. Finkl, Evanston, Ill., assignor to A. Finkl & Sons Company, Chicago, Ill.

Filed Mar. 26, 1973, Ser. No. 345,244

Int. Cl. C21c *7/00;* **C22c** *33/00*

U.S. Cl. 75—53 **2 Claims**

1. In a method of controlling sulphur fume generation during the addition of specification sulphur in the steelmaking process, the steps of

forming a heat of molten steel which requires the addition of sulphur to ensure achievement of a pre-determined sulphur level in the final product, said molten steel having the following nominal composition:

C	.47/.55
Mn	.95/1.30
S	.06/.10
Si	.35
Ni	.25
Cr	.50/.90
Mo	.10/.25
V	.03/.05

conditioning the molten steel prior to tap by removing slag whereby the steel is tapped in a substantially slag-free condition, and

then adding iron sulfide, as a source of sulphur to the tap vessel, while tapping the molten steel.

3,849,126

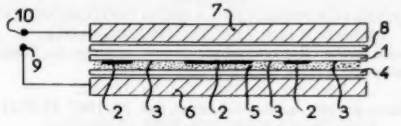
NON-ELECTROSTATIC METHOD FOR PRODUCING ELECTROGRAPHIC IMAGE

Marcus Cantarano, 47, Av. F. Roosevelt-Bat B, Thiais (94), France

Continuation of Ser. No. 631,792, April 18, 1967, abandoned. This application June 9, 1971, Ser. No. 151,489The portion of the term of this patent subsequent to Dec. 4, 1990, has been disclaimed.

Int. Cl. G03g *17/00*

U.S. Cl. 96—1 R **6 Claims**



1. A method for producing an electrographic image from an original provided with a conductivity pattern ranging from a portion having a greater conductivity to a portion having a lesser conductivity comprising the steps of:

a. interposing a thin uniform layer of electrically chargeable particles between a conductive image carrier and said conductivity pattern of said original,

b. disposing said original and said conductive image carrier between a first and a second electrode so that said original is interposed between said layer of electrically chargeable particles and said second electrode,

c. interposing a dielectric layer between said image carrier and said first electrode to insulate said conductive image carrier therefrom and

d. generating an alternating electric field of sufficient strength between said electrodes to charge said electrically chargeable particles whereby said particles receive electric charges having different maximum values according to the different conductivities of said portions of said conductivity pattern whereby the said electrically charged particles are attracted toward and away from said conductivity pattern of said original whereby a portion of said electrically charged particles are removed from said conductivity pattern and form an electrographic image on said image carrier and the remainder of said particles form an electrographic image on said original.

3,849,127

ELECTROSTATOGRAPHIC PROCESS IN WHICH COATED CARRIER PARTICLES ARE USED

Robert W. Madrid, Macedon, and Robert J. Hagenbach, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 27,114, April 9, 1970, which is a continuation-in-part of Ser. No. 585,739, Oct. 11, 1966,. This application Apr. 12, 1972, Ser. No. 244,254

Int. Cl. G03g *9/02*

U.S. Cl. 96—1 SD **3 Claims**

1. An electrostatographic imaging process comprising the steps of forming an electrostatic latent image on a recording surface and contacting said electrostatic latent image with a developer mixture comprising finely-divided toner particles electrostatically clinging to the surface of carrier particles, said carrier particles comprising particulate cores coated with an outer layer comprising from about 1 to about 20 microns in thickness of a blend of a polyphenylene oxide resin and a solid terpolymer of (1) from about 5 to about 94.5 percent, by weight, of an unsaturated silicon free organic compound, (2) from about 94.5 to about 5 percent, by weight, of an unsaturated silicon free organic compound different from the compound of (1), and (3) from about 0.5 to about 50 percent, by

weight, of a polymerizable organosilicon compound selected from the group consisting of silanes, silanols, and siloxanes having from 1 to 3 hydrolyzable groups and an organic group attached directly to a silicon atom containing less than 8 carbon atoms and an unsaturated carbon to carbon linkage, the weight ratio of said polyphenylene oxide to said terpolymer being from about 90:10 to about 25:75, whereby at least a portion of said finely-divided toner particles are attracted to and held on said recording surface in conformance to said electrostatic latent image.

3,849,128

PROCESS FOR PRODUCING A DRUM PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY

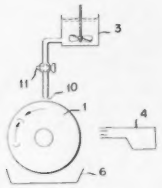
Takashi Ihara, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Ohta-ku, Tokyo, Japan

Filed Dec. 19, 1968, Ser. No. 785,122

Claims priority, application Japan, Dec. 30, 1967, 42-85219

Int. Cl. G03b *5/08;* **B05b** *13/06*

U.S. Cl. 96—1.5 **8 Claims**



1. A method for providing a drum member for electrophotography comprising the steps of:

a. providing a drum having an electrically conductive surface;

b. while rotating said drum, applying to the surface thereof a film of liquid comprising a mixture of particulate photoconductive material, a binder resin, a first solvent therefor, and a second solvent, said second solvent having a lower vapor pressure than said first solvent, said second solvent being employed in quantity sufficient to lengthen the evaporation time of the total solvent, said total solvent comprising said first and second solvents;

c. evaporating said first and second solvents from said photoconductive liquid film by applying heated air thereto to provide a solid photoconductive layer of less than 100 microns on said drum surface;

d. while rotating said drum, applying to the surface of said photoconductive layer a film of liquid containing electrically insulative translucent material and a solvent therefor; and

e. evaporating the solvent from said insulative liquid film by applying heated air thereto to provide a substantially imperforate solid translucent insulative layer on said photoconductive layer.

3,849,129

ELECTROPHOTOGRAPHIC ELEMENT CONTAINING Se-Te ALLOY LAYERS

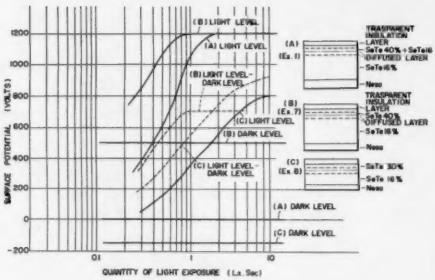
Koichi Kinoshita, Narashino, and Tadaji Fukuda, Tokyo, both of Japan, assignors to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of Ser. No. 84,354, Oct. 27, 1970, abandoned. This application Nov. 30, 1972, Ser. No. 310,886

Int. Cl. G03g *5/00, 5/04*

U.S. Cl. 96—1.5 **9 Claims**

1. In a photosensitive element for use in the method of electrophotography wherein a first electric field is applied across a photosensitive element comprising an electroconductive layer, a photosensitive photoconductive layer consisting of a Se–Te alloy having a percentage of Te therein in the range of 0 to 25 mol percent manifesting persistent internal polarization and a highly insulative layer integrally bonded to said photosensitive photoconductive layer to deposit a charge of one polarity on the surface of said highly insulative layer, and a second electric field is applied across said photosensitive element to deposit a charge of the opposite polarity on the surface of said highly insulative layer concurrently with projection of a light image upon said photosensitive element whereby to form a latent image on the surface of said highly



insulative layer corresponding to said light image, the improvement which comprises a layer at the interface between said photosensitive photoconductive layer and said highly insulative layer, said interfacial layer consisting of a mixture of first Se-Te alloy having a percentage of Te therein in the range of 20 to 50 mol percent and a second Se–Te alloy having a percentage of Te therein in the range of 0 to 25 mol percent, the percentage of Te in said first alloy being higher than that in said second alloy, and the ratio of said first alloy to said second alloy in said interfacial layer being in the range of from 1:1 to 1:2.

3,849,130

ORGANIC PHOTOCONDUCTIVE COMPOSITION AND ELECTROPHOTOGRAPHIC MEMBER

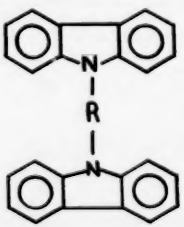
Jean-Pierre Montillier, Manchester, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 236,196, March 20, 1972, abandoned, and a continuation-in-part of Ser. No. 260,972, June 8, 1972, abandoned. This application Dec. 1, 1972, Ser. No. 311,222

Int. Cl. G03g *5/10*

U.S. Cl. 96—1.5 **8 Claims**

1. A photoconductive electrically insulating composition comprising a charge transfer complex of a dicarbazolyl compound of the formula:



wherein R is a cycloalkyl group, with a Lewis acid selected from the group consisting of 2,4,7-trinitro-9-fluorenone and 2,4,5,7-tetranitro-9-fluorenone, the mole ratio of dicarbazolyl

compound to Lewis acid being from about 1:0.5 to 1:5, and from 5 to 50 percent by weight of a polymer selected from the group consisting of poly-N-vinyl carbazole and a halogenated poly-N-vinyl carbazole.

3,849,131

COLOR PHOTOGRAPHIC DIFFUSION TRANSFER PROCESS

Yoshinobu Yoshida, and Atsuaki Arai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 15, 1973, Ser. No. 388,670
Claims priority, application Japan, Aug. 17, 1973, 48-82274
Int. Cl. G03c *7/00, 5/54, 1/40, 5/30*
U.S. Cl. 96—3 **6 Claims**

1. A color photographic diffusion transfer process comprising

imagewise exposing a photographic material having at least one silver halide emulsion layer and a dye developer present adjacent to the silver halide in said silver halide emulsion layer and

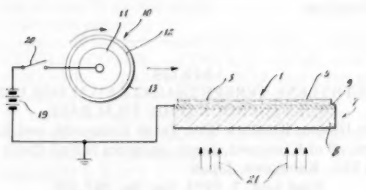
treating said photographic material in superposed relation with an image receiving material with an alkaline processing solution whereby the dye developer at the exposed portions of the silver halide emulsion layer is immobilized and the dye developer at the unexposed portions of the silver halide emulsion layer is transferred by diffusion to the image receiving material, said treatment with said alkaline processing solution being in the presence of 6,6′,7,7′-tetrahydroxy-4,4,4′,4′-tetramethyl-bis-2,2′-spirocumarone.

3,849,132

PHOTOELECTROPHORETIC IMAGING METHOD EMPLOYING A CHROMOGENIC REACTION

John B. Wells, Rochester, and Joseph Mammino, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Jan. 4, 1973, Ser. No. 321,103
Int. Cl. G03g *5/00, 13/00, 17/00*
U.S. Cl. 96—1.3 **9 Claims**



1. An imaging method comprising the steps of:

a. providing a layer of an imaging suspension comprising finely divided chromogenic particles in an electrically insulating liquid between a pair of electrodes at least one of which is at least partially transparent, each of said particles comprising an electrically photosensitive pigment;

b. providing an image receiving layer comprising a co-reactant for the chromogenic material of said particle;

c. applying an electrical field across said suspension layer and exposing said layer to an imagewise pattern of activating electromagnetic radiation through said transparent electrode, wherein an image is formed on said image receiving layer; and

d. chromogenically reacting the chromogenic material of the particles with the co-reactant of the receiving layer.

3,849,133

PROCESS FOR FORMING PHOTOGRAPHIC IMAGES BY HIGH SPEED DIFFUSION TRANSFER PROCESS

Haruhiko Iwano; Mitsugu Tanaka; Tesuo Otsuki, and Atsuaki Arai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 20, 1971, Ser. No. 135,766
Claims priority, application Japan, Apr. 20, 1970, 45-33135
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 R **12 Claims**

1. In a process for forming photographic images by a high speed silver halide diffusion transfer process, the improvement which comprises using an aqueous developer containing a small amount of a highly active silver halide developing agent and a large amount of at least one phenol having substantially no silver halide developing activity.

3,849,134

COPPER (I) SALT-HYDROPHILIC BINDER LITHOGRAPHIC IMAGES

Ralph Kingsley Blake, Westfield, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 60,619, Aug. 3, 1970, Pat. No. 3,736,871, and a continuation-in-part of Ser. No. 864,867, Oct. 8, 1969, abandoned. This application Nov. 15, 1972, Ser. No. 306,621
Int. Cl. G03c *5/54;* **G03f** *7/02*
U.S. Cl. 96—29 L **10 Claims**

1. A transfer process for making lithographic images on a receptor which comprises

1. exposing imagewise a photographic element comprising a support bearing a layer of a dispersion of lightsensitive silver halide in a macromolecular organic protein colloid binder; developing the exposed layer with a silver halide developing agent to form a silver image; treating the developed silver image with an aqueous solution having a pH about 0.5 to 6 containing
   a. a water-soluble, inorganiic copper salt yielding copper (II) ions in a concentration of 0.01 molar to about 2.0 molar,
   b. a water-soluble, inorganic halide yielding a halogen ion forming a silver salt no more soluble in water than silver chloride in a concentration of 0.01 to 0.5 molar, to reduce copper (II) ions,
2. contacting the wet, treated, imaged surface with the surface of a receptor which comprises a macromolecular organic protein colloid on a support, and
3. separating the treated imaged surface from the receptor surface, said receptor surface being treated with an oleophilogenic compound which is on the treated imaged surface or which is applied after the treated imaged surface and receptor surface have been separated.

ERRATUM

For Class 96—35 see:
Patent No. 3,849,144

3,849,135

ETCH-BLEACHING TREATMENT OF EXPOSED AND DEVELOPED PHOTO PLATES AND FILMS

Jupp Karlikowski, Eurasburg, and Hans Michel, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 20, 1972, Ser. No. 308,112
Claims priority, application Germany, Dec. 10, 1971, 2161407
Int. Cl. G03c *5/00*
U.S. Cl. 96—36 **6 Claims**

1. A method of physically removing gelatin particles during etch-bleaching of exposed and developed photo-plates, films

and the like utilizing gelatin emulsions, said method comprising:

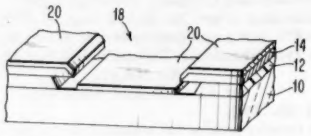
immersing the developed photo article in an etch-bleaching solution; and

applying an ultrasonic sound, for at least a period of minutes to the immersed photo article from an ultrasonic source to apply mechanical force to the gelatin particles of the photo article, whereby and subsequently washing the photo article, preferably with a period of applied ultrasonic sound, such particles are thereby physically removed completely therefrom.

3,849,136
MASKING OF DEPOSITED THIN FILMS BY USE OF A MASKING LAYER PHOTORESIST COMPOSITE

Kurt R. Grebe, Beacon, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 31, 1973, Ser. No. 384,349
Int. Cl. G03c *5/00;* **B44d** *1/18*
U.S. Cl. 96—36.2 **18 Claims**



1. A method of depositing patterned thin films on a substrate, comprising:

forming a first layer of photosensitive material which can be patterned on said substrate,

forming a masking layer on said first layer,

patterning said masking layer to form openings therein which extend to said first photosensitive layer,

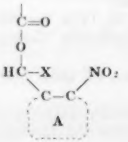
patterning said first photosensitive layer to form openings therein which extend to said substrate and which are aligned with said openings in said masking layer and of larger size than said openings in said masking layer, and depositing said thin films onto said substrate through said aligned openings using said masking layer as a deposition mask.

3,849,137
LITHOGRAPHIC PRINTING PLATES AND PHOTORESISTS COMPRISING A PHOTOSENSITIVE POLYMER

Helmut Barzynski, Lambsheim; Mong-Jon Jun, Ludwigshafen; Dietrich Saenger, Ludwigshafen, and Otto Volkert, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

Filed Oct. 5, 1972, Ser. No. 295,146
Claims priority, application Germany, Oct. 12, 1972, 2150691
Int. Cl. G03c *1/70, 1/72*
U.S. Cl. 96—67 **2 Claims**

1. A lithographic printing plate comprising a support and a layer of a photosensitive coating material on said support, said material consisting essentially of a polymer having a molecular weight of more than 500 and containing in the molecule such an amount but at least 5% by weight, with reference to the molecular weight, of aromatic or heteroaromatic o-nitrocarbinol ester groups of the formula I:



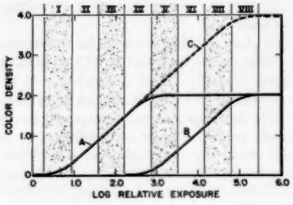
(I)

where A denotes an aromatic or pyridine system having 5 to 14 ring members, X denotes hydrogen, an alkyl of 1 to 8 carbon atoms or an aryl or aralkyl that its exposed areas can be washed out after exposure with an alkaline solvent or solvent mixture used as developer in which the said coating material was insoluble prior to exposure.

3,849,138
COLOR PHOTOGRAPHY

Charles W. Wyckoff, Needham, Mass., assignor to Applied Photo Sciences, Inc., Newbury, Mass.

Division of Ser. No. 876,626, Nov. 14, 1969, Pat. No. 3,663,228, which is a continuation-in-part of Ser. No. 445,496, April 9, 1965, abandoned, which is a continuation-in-part of Ser. No. 98,176, March 24, 1961, Pat. No. 3,450,536. This application Jan. 6, 1972, Ser. No. 215,878
Int. Cl. G03c *1/76, 3/00, 1/84, 7/16*
U.S. Cl. 96—74 **25 Claims**



1. A natural color photographic film comprising:

at least two groups of photosensitive emulsions, each group being sensitive to a different spectral region;

each of said groups comprising a plurality of emulsions of different effective speeds;

all of said emulsions being capable of producing a color image, and being characterized by D-log E curves of substantially equal slope, and being in photographically active relationship to each other to produce a single natural color image; and

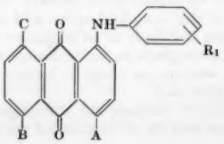
the effective speed of one emulsion in each of said groups being such that it commences responding to impinging light as another emulsion in the same group approaches saturation.

3,849,139
POLYETHYLENE TEREPHTHALATE FILM FOR USE AS ROENTGENOGRAPHIC FILM BASE

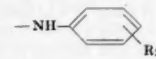
Noburo Hibino; Kunihira Seto; Teruo Kobayashi, and Kazuo Inoue, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 7, 1972, Ser. No. 287,209
Claims priority, application Japan, Sept. 9, 1971, 46-69853
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 R **3 Claims**

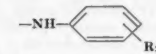
1. A roentgenographic photographic element comprising a base film comprising a film of polyethylene terephthalate and, incorporated therein, (a) at least one of 1-(p-benzyloxyanilino)-4-hydroxyanthraquinone or 1-(p-phenethyloxyanilino)-4-hydroxyanthraquinone, and (b) an anthraquinone derivative of the general formula



wherein A, B and C each is a hydrogen atom, a hydroxyl group or a



group with the proviso that A, B and C are not simultaneously hydrogen atoms, and when A is a



group or a hydroxyl group, B and C are not simultaneously hydrogen atoms; R_1 and R_2 are a hydrogen atom, a halogen atom, an ortho-substituted alkyl group or an alkoxy group, said base film having coated thereon an X-ray sensitive silver halide photographic emulsion.

3,849,140

DIFFUSION-RESISTANT DISPERSIBLE YELLOW COUPLERS FOR THE PRODUCTION OF PHOTOGRAPHIC COLOR IMAGES

Karl Kuffner, Unterhaching near Munich, and Hans Glockner, Pullach near Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

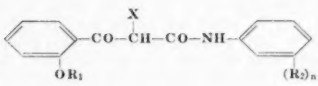
Filed Mar. 22, 1972, Ser. No. 236,972

Claims priority, application Germany, Mar. 25, 1971, 2114577

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **3 Claims**

1. A color photographic material which comprises at least one silver halide emulsion layer containing a yellow coupler of the formula



in which

R_1 represents a linear or branched hydrocarbon chain having at least 10 carbon atoms;

X represents chlorine;

R_2 represents halogen, cyano, $-R_3$, $-OR_3$, $-COOR_3$, $-CONH_2$, $-CONHR_3$, $-CON(R_3)_2$, $-SO_2R_3$, $-SO_2NH_2$, $-SO_2NHR_3$, $-SO_2N(R_3)_2$ or $-SO_2F$, and if two or more groups R_2 are present, they can be the same or different; R_3 represents alkyl having 1 to 4 carbon atoms or aryl, and if two groups R_3 occur in the same radical, they can be the same or different; and

n represents 1, 2 or 3.

3,849,141

PULVERULENT METAL COATING COMPOSITIONS

Bert E. Palm, Mentor, and Alexander W. Kennedy, Chardon, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Oct. 18, 1972, Ser. No. 298,647

Int. Cl. C09d *5/10*

U.S. Cl. 106—1 **21 Claims**

1. In a pre-paint coating composition adapted for treating metal substrates and providing corrosion resistance thereto, said composition comprising liquid medium containing a hexavalent chromium-containing substance, a reducing agent and pulverulent zinc, the improvement comprising pulverulent zinc having particle size such that virtually all particles have size finer than 16 microns, with less than about 10 weight percent of said particles having size greater than 10 microns and with from about 5 to about 25 weight percent having size finer than 2 microns.

3,849,142

BARIUM- OR STRONTIUM-CONTAINING GLASS FRITS FOR SILVER METALLIZING COMPOSITIONS

Joel A. Conwicke, Youngstown, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 13, 1972, Ser. No. 314,602

Int. Cl. C09d *5/24*

U.S. Cl. 106—1 **5 Claims**

1. In a noble-metal composition comprising

35–85 percent of a noble-metal powder;

15–70 percent of a liquid vehicle;

2–10 percent of Bi_2O_3; and

2–6 percent of a glass frit binder: the improvement comprising, as said binder, a glass frit consisting essentially of,

8–65 percent BaO or SrO or a mixture of BaO and SrO;

15–75 percent CdO; and

3–45 percent of B_2O_3 or SiO_2 or a mixture of B_2O_3 and SiO_2, the amount of either said B_2O_3 or said SiO_2 not exceeding about 30 percent.

3,849,143

INK STORAGE COMPOSITION

James R. Hubbard, Moorestown, N.J., assignor to Graphic Controls Corporation, Buffalo, N.Y.

Filed Dec. 1, 1972, Ser. No. 311,351

Int. Cl. C09d *11/00*

U.S. Cl. 106—22 **12 Claims**

1. A composition consisting essentially of a viscous single phase, uniformly dispersed mixture of chrysotile asbestos fibers of grades **5-7** and a fluid ink comprising at least one polar solvent and a dye soluble therein, said fluid ink comprising at least **70** volume percent of said composition and being releasable from retention by said fibers in said single phase mixture by means of physical contact with a capillary ink delivery means.

3,849,144

LIGHT-SENSITIVE COMPOSITIONS COMPRISING POLYMERS CONTAINING DIARYLCYCLOPROPENE MOIETY AND PROCESS OF USING

Donald H. Wadsworth, and William C. Perkins, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 164,044, July 19, 1971, Pat. No. 3,779,989. This application Aug. 27, 1973, Ser. No. 392,168

Int. Cl. G03c *1/68, 1/70*

U.S. Cl. 96—35.1 **24 Claims**

1. A light-sensitive composition comprising

a light-sensitive polymer having a backbone which is the residue of a polymer comprised of repeating units at least 30 percent of which are characterized by containing an activated phenyl group and having attached directly to said phenyl group a diarylcyclopropene moiety,

and a solvent for said light-sensitive polymer.

3,849,145

CORDIERITE BINDER COMPOSITION

John J. Pitha, Lenox, Mass., assignor to General Electric Company

Division of Ser. No. 781,473, Dec. 5, 1968, Pat. No. 3,607,790. This application Oct. 19, 1970, Ser. No. 82,140

Int. Cl. Co3c *3/22*; **C04b** *33/26*

U.S. Cl. 106—39.6 **3 Claims**

1. A composition of matter, suitable for use as a binder, consisting essentially of a mixture of about 6 to 22.5 parts by weight of cordierite-forming glass material and about 8 to 46 parts by weight of cordierite-forming crystalline material, in

which the glass material is a fired and vitrified mixture of SiO_2, Al_2O_3 and MgO, the crystalline material being talc plus a member of the group consisting of a porcelain mixture and kaolin.

3,849,146

DIRECT-PRINT LIGHT-DEVELOPABLE SILVER HALIDE EMULSION CONTAINING CYCLIC DIOXIDE OR SELENONE AS SENSITIZER

David W. Walters, Williamson; Robert E. Heeks, Penfield, and Donald P. Sullivan, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 2, 1973, Ser. No. 320,422
Int. Cl. G03c *1/28*
U.S. Cl. 96—107 **8 Claims**

1. A photosensitive direct-print light developable emulsion comprising silver halide grains, a binder, iodide and a cyclic compound having the general formula:

wherein X is selected from the group consisting of S and Se; and hydrogen and lower alkyl substitution products thereof; said cyclic compound being present in an amount effective to sensitize said emulsion.

3,849,147

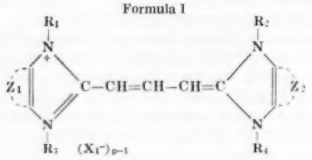
SILVER HALIDE SUPERSENSITIZED PHOTOGRAPHIC EMULSION

Keisuke Shiba, and Akira Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

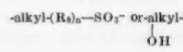
Continuation-in-part of Ser. No. 49,981, June 25, 1970, Pat. No. 3,718,475. This application Jan. 10, 1973, Ser. No. 322,581
Claims priority, application Japan, June 25, 1969, 44-50118The portion of the term of this patent subsequent to Feb. 27, 1990, has been disclaimed.
Int. Cl. G03c *1/14*
U.S. Cl. 96—124 **15 Claims**

1. A super-sensitized silver halide photographic emulsion wherein the light-sensitivity in the wavelength region of 500–530 mμ is increased containing at least one first sensitizing dye represented by the following formula I:

Formula I

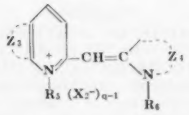


wherein R_1 and R_2, which may be the same or different, each represents an alkyl group, an aryl group or a substituted alkyl group with the substituent being vinyl, aryl, acetoxy, carboxy, sulfato, N-acetylsulfamyl or hydroxy; R_3 and R_4, which may be the same or different, each represents an alkyl group, a substituted alkyl group with the substituents being the same as in the substituted alkyl group of R_1 and R_2, an aryl group, a sulfoalkyl group or a substituted alkyl group having a sulfo group of the formula



wherein R_5 represents an atomic group and n is an integer of at least 1; at least one of said R_3 and R_4 being sulfoalkyl or said substituted alkyl group having a sulfo group, the end carbon atom of said sulfoalkyl group or said substituted alkyl group having a sulfo group forming a covalent bond with the nitrogen atom of the heterocyclic nucleus; Z_1 and Z_2, which may be the same or different, each represents a non-metallic atomic group necessary to complete a heterocyclic nucleus of the benzimadazole series, said nucleus being unsubstituted or substituted with halogen, an N-unsubstituted or alkyl-substituted sulfamyl or carbamyl group, an N-disubstituted sulfamyl group, an alkyl sulfonyl group, a trifluoromethyl group, an alkyl group, a substituted alkyl group wherein the substituent is an aryl group or a carboxyl group, a cyano group, a phenyl group, a carboalkoxyl group, a hydroxyl group or an alkoxyl group; X_1^- represents an acid anion group and p is an integer of 1 or 2, being 1 when the dye of formula I forms an intermolecular salt; and at least 1 second sensitizing dye represented by the following formula II:

Formula II



wherein Z_3 represents a non-metallic atomic group necessary to complete a substituted or unsubstituted heterocyclic nucleus of the 2-quinoline series wherein the substituent is alkyl or halogen; Z_4 represents a non-metallic atomic group necessary to complete a benzoxazole nucleus, a naphthoxazole nucleus, a benzthiazole nucleus, a benzselenazole nucleus, a naphthothiazole nucleus or a naphthoselenazole nucleus, each of said nuclei being unsubstituted or substituted by an alkyl group or a trifluoromethyl group, a phenyl group, a halogen atom, an alkoxyl group or an alkoxyl group having a sulfo group; R_5 and R_6, which may be the same or different each represents an alkyl group, a substituted alkyl group with the substituents being the same as in the substituted alkyl group of R_1 and R_2, a sulfoalkyl group or said substituted alkyl group having a sulfo group; at least one of said R_5 and R_6 being a sulfoalkyl group or said substituted alkyl group having a sulfo group except where the heterocyclic nucleus completed by Z_4 has been substituted by a sulfoalkoxyl group; X_2^- represents an acid anion; and q is an integer of 1 or 2, q being 1 when the dye of formula II forms an intermolecular salt.

ERRATUM

For Class 106—39 see:
Patent No. 3,849,145

3,849,148

METHOD OF TREATING GLASS FIBERS TO IMPROVE ADHESION TO POLYOLEFINS

Chester S. Temple, Kennedy Twp., Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 63,830, Aug. 14, 1970, abandoned. This application Apr. 14, 1972, Ser. No. 243,992
Int. Cl. C03c *25/02*; **D06m** *13/00*
U.S. Cl. 106—287 SB **3 Claims**

1. An aqueous size suitable for application on glass fibers consisting of an aqueous emulsion consisting of 0.5 to 10 percent by weight of an organic-silane coupling agent, 0.1 to 6.0 percent by weight of a nonionic surfactant, 0.001 to 1 percent by weight of a glass fiber lubricant and 0.1 to 6 percent by weight of an organic peroxide, free radical initiator having a half life exceeding 60 hours at 212°F. and 20 minutes at 300°F.

3,849,149
MODIFICATION OF MINERAL SURFACES

Jean Drummond Swift, Olinda; David Geoffrey Hawthorne, South Oakleigh; Bryan Clarence Loft, Strathmore, and David Henry Solomon, Glen Waverley, Victoria, all of Australia, assignors to Commonwealth Scientific and Industrial Research, Campbell, Australia

Filed Feb. 1, 1972, Ser. No. 222,684

Claims priority, application Australia, Feb. 10, 1971, 3980/71; Feb. 10, 1971, 3982/71; Feb. 10, 1971, 3984/71; Feb. 10, 1971, 3986/71

Int. Cl. C09g *1/00*

U.S. Cl. 106—288 B **8 Claims**

1. An inorganic pigment or filler material consisting of a particulate inorganic mineral other than titanium dioxide having an acidic surface coating with a significant number of acidic sites with pKa values of less than 2.8 wherein the acidic surface coating comprises at least one material selected from the oxides, hydrated oxides, silicates and phosphates of multivalent metals.

3,849,150
PRODUCTION OF PIGMENT PASTES FOR PRINTING INK AND VARNISH PAINT

Klaus Schrempp, Ludwigshafen; Werner Jettmar, Mannheim; Rudolf Polster, Frankenthal, and Eduard Hartmann, Limburgerhof, all of Germany, assignors to Badische Anilin & Soda Fabrik Aktiengesellschaft, Rheinland-Pfalz, Germany

Filed June 13, 1972, Ser. No. 262,352

Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q **7 Claims**

1. A process for the production of high tinctorial strength pigment pastes for printing inks and varnish paints without a previous conditioning of an initial agglomerate-forming finely particled crude pigment, which process comprises admixing said crude pigment, which has been distorted in crystallization and which is strongly agglomerated and whose primary particle size is less than 1 micron and whose BET surface area is within the range from 0.5 to 15 m^2/g, at room temperature to 200°C. in a liquid medium consisting essentially of an organic solvent suitable for said printing inks and varnish paints or a mixture of such solvents or a resin solution in such solvents, the ratio of crude pigment to liquid medium being from 1:100 to 1:0.5, and further mixing the resulting suspension consisting essentially of said pigment and said solvent at said temperature until the pigment exhibits optimum tinctorial properties as evidenced by a very uniform particle size and uniform distribution in said solvent.

3,849,151
FLOCCULATION OF KAOLIN SLURRIES WITH PHOSPHORIC ACID

William F. Abercrombie, Jr., Macon, Ga., assignor to J. M. Huber Corporation, Huber, Ga.

Filed July 2, 1973, Ser. No. 375,636

Int. Cl. C08h *17/06*; **C09c** *1/42*

U.S. Cl. 106—288 B **11 Claims**

1. In the method for producing high grade kaolin clay products which comprises leaching a dispersed kaolin clay water slurry with about 3 to about 10 pounds, per ton of clay, of a leaching agent capable of reducing the insoluble salts present in said slurry as impurities to their soluble form, flocculating said slurry with a flocculating agent, and dewatering the resultant slurry mixture to remove said soluble salts, the improvement comprising:

adding phosphoric acid as a flocculating agent to said slurry during the leaching step, said phosphoric acid being added in an amount sufficient to reduce the pH of the slurry to between about 2.5 to about 4.5, to thereby obtain a finished clay product that upon dispersion, possesses improved low viscosity and slurry stability characteristics.

3,849,152
POLYSILOXANE ENCAPSULATION OF PIGMENTS

Victor J. Mimeault, Shaker Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Nov. 6, 1972, Ser. No. 303,831

Int. Cl. C09c *1/34*

U.S. Cl. 106—308 Q **7 Claims**

1. Completely encapsulated pigment particles of improved dispersion, color strength, and heat and light stability for incorporation into a moldable polymeric resinous system, said pigment being a chrome-based pigment, and the encapsulation of said particles being a completely encompassing, continuous, adherent, protective envelope consisting essentially of a polysiloxane having a sufficient polymeric growth to be solid at room temperatures.

3,849,153
COLOR CORRECTING PROCESS

Lewis A. Giorgi, 286 New Main St., Yonkers, N.Y. 10701

Filed May 11, 1973, Ser. No. 359,415

Int. Cl. B23p *7/00*

U.S. Cl. 117—2 R **4 Claims**

1. A process for color-correcting areas of a color studio relief or other color photograph having applied colors which comprises applying anhydrous diacetone alcohol to selected areas of the photograph to be modified and then treating those areas with a selected dye soluble in diacetone alcohol but not in water, steaming the thus treated areas and treating said steamed photograph with a 50:50 mixture by volume of denatured alcohol and a stabilizer.

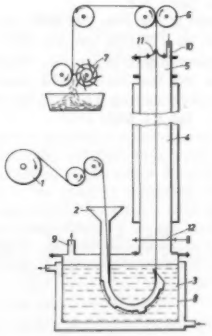
3,849,154
PROCESS FOR THE CONTINUOUS PRODUCTION OF FIBRE-REINFORCED POLYAMIDE MOULDING COMPOSITIONS

Dietrich Michael, Krefeld; Heinrich Gilch, Bonn-Ippendorf, and Wilhelm Hechelhammer, Krefeld, all of Germany, assignors to Farbenfabrik Bayer, Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 15, 1972, Ser. No. 234,907

Int. Cl. B32b *17/04*; **C03c** *25/02*

U.S. Cl. 117—4 **12 Claims**



1. A process for the continuous production of homogeneous fibre-reinforced polyamide molding compositions which com-

prises drawing a fibre structure through a melt of a normally foamable polymerisation mixture, which contains but is substantially unaffected by up to 0.3 percent by weight of water, and which comprises a commercial grade lactam containing at least four ring members, from 0.05 to 10 percent by weight, based on the lactam, of a catalyst selected from the group consisting of an alkali metal and an alkaline earth metal salt of formic acid and from 0.05 to 20 percent by weight, based on the lactam used, of an activator selected from the group consisting of an organic isocyanate and a masked organic isocyanate and impregnating said fibre structure with said polymerization mixture, thereafter guiding the impregnated structure through a reaction zone which has a temperature in the range from the temperature of the polymerization mixture to 350°C, and polymerizing the impregnated fibre structure in the reaction zone, cooling the polymerized structure thus obtained and thereafter chopping it into a granulate free of foam bubbles.

3,849,155

BRIGHTENING OF POLYACRYLONITRILE WET TOW

Gottfried Eigenmann, Therwil; Leo Kaiser, Aesch, and Christian Luethi, Muenchenstein, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

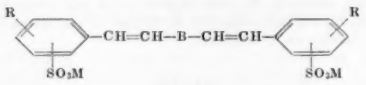
Filed June 8, 1972, Ser. No. 260,786

Claims priority, application Switzerland, June 18, 1971, 8929/71

Int. Cl. C09b *23/14*; **C09k** *1/60*

U.S. Cl. 117—7 **9 Claims**

1. A process for providing brightened polyacrylonitrile stretched fibres, comprising treating the fibres in the gel state in a bath which contains at least one compound of the formula



wherein B is 4,4′-biphenylene, 1,4-phenylene or 2,6-naphthylene, R is hydrogen, alkyl with 1 to 4 carbon atome, halogen, $-SO_3M$ or alkoxy with 1 to 4 carbon atoms located in the ortho- or meta-position to the bridge member and M denotes the hydrogen, alkali metal, ammonium or amine salt ion, the solubility of these compounds in water at 90°C being at least 10 g/l and drying the treated fibers.

3,849,156

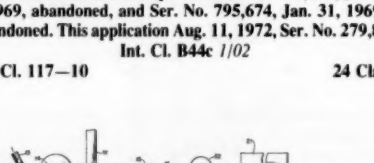
PROCESS FOR PROVIDING A BACKING ON CARPETS

Lawrence Marlin, Yorktown Heights, and Eric George Schwarz, Somers, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 795,694, Jan. 31, 1969, abandoned, and Ser. No. 199,170, Nov. 16, 1971, abandoned, which is a continuation-in-part of Ser. No. 795,406, Jan. 31, 1969, abandoned, and Ser. No. 795,674, Jan. 31, 1969, abandoned. This application Aug. 11, 1972, Ser. No. 279,887

Int. Cl. B44c *1/02*

U.S. Cl. 117—10 **24 Claims**



1. A process for providing a backing on a carpeting material which comprises:

I. forming a substantially non-aqueous mixture comprising

a. an organic polyisocyanate,

b. a polyhydroxyl-containing compound substantially reactive with said polyisocyanate only at a temperature of at least 70°C. to form a polyurethane,

c. an organosilicon surfactant for structurally stabilizing the froth produced according to step (II) below, during the period that the liquid phase of said froth is chemically stable and until said froth is cured by heating to a temperature of at least 70°C. to produce a cured foam, and

d. a catalyst having substantial catalytic activity in the curing of said mixture only at temperatures of at least 70°C.;

II. substantially uniformly dispersing inert gas throughout the mixture by mechanical beating of said mixture to form a heat curable froth which is substantially structurally and chemically stable, but workable at ambient conditions, wherein

i. said froth is free of auxiliary blowing agents;

ii. components (a), (b), (c) and (d) above, present in the liquid phase of said froth are such that an unfrothed admixture containing only (a), (b), (c) and (d) in the same proportions (a), (b), (c) and (d) are present in the liquid phase of said froth is chemically stable to the extent that the admixture retains a viscosity of not greater than 10,000 cps fro about 2,600 seconds at 25°C. ± 0.5°C.;

iii. said froth has a density of not greater than 45 percent of the density of the unfrothed liquid phase; and

iv. a ¼ inch section of said froth is curable to a tack free conditions in not more than about 30 minutes at a temperature of 125°C.; and

III. applying said froth to the back of a carpeting material;

IV. shaping said froth into a desired shape; steps (III) and (IV) being carried out without initiating any substantial polymerization; and

V. heat curing the resultant shaped froth at a temperature of at least 70°C. to form a cured polyurethane foam backing on said carpeting material, any further expansion of said froth during heat curing being substantially only thermal expansion of said inert gas employed.

3,849,157

CARPET EMBOSSING IN REGISTER WITH PRINT

Leon B. Palmer, Little Falls, and Robert P. Conger, Park Ridge, both of N.J., assignors to Congoleum Industries, Inc., Kearny, N.J.

Filed Aug. 6, 1973, Ser. No. 386,047

Int. Cl. B44d *1/02*, *5/02*; **D03d** *27/00*

U.S. Cl. 117—11 **30 Claims**

1. A process for producing an embossed effect on nylon pile fabric having a surface of nylon fibers which comprises,

applying to defined areas of the pile surface of said fabric a chamical embossing agent for said fibers,

said agent being blended into a liquid base vehicle and being a metal halide and an acid,

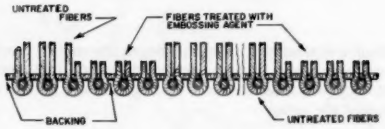
allowing said embossing agent in its vehicle to remain in contact with said fibers for a period of time and at a temperature sufficient to reduce the height of said pile, without deterioration of said fibers and, thereafter, effectively removing the embossed agent from the fabric,

said reduction in height of the fibers being in the area contacted by said embossing agent only and being a reduction sufficieint to display a significant embossed effect in the overall fabric.

3,849,158
CARPET EMBOSSING IN REGISTER WITH PRINT

Leon B. Palmer, Little Falls, and Robert P. Conger, Park Ridge, both of N.J., assignors to Congoleum Industries, Inc., Kearny, N.J.

Filed Aug. 6, 1973, Ser. No. 386,037
Int. Cl. B44d 1/02, 5/02; D03d 27/00
U.S. Cl. 117—11 27 Claims



1. A process for producing an embossed effect on nylon pile fabric having a surface of nylon fibers which comprises,

applying to defined areas of the pile surface of said fabric a chemical embossing agent for said fibers,

said agent being an azole having a five membered heterocyclic aromatic ring or fused aromatic ring containing two or more heteroatoms, in the five membered ring, at least one of which is always nitrogen, blended into a liquid base vehicle, said liquid base vehicle also including an acid,

allowing said embossing agent in its vehicle to remain in contact with said fibers for a period of time and at a temperature sufficient to reduce the height of said pile, without deterioration of said fibers,

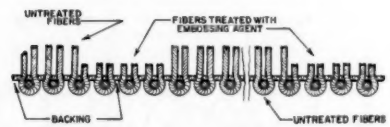
and, thereafter, effectively removing the embossing agent from the fabric,

said reduction in height of the fibers being in the area contacted by said embossing agent only and being a reduction sufficient to display a significant embossed effect in the overall fabric.

3,849,159
CARPET EMBOSSING IN REGISTER WITH PRINT

Leon B. Palmer, Little Falls, and Robert P. Conger, Park Ridge, both of N.J., assignors to Congoleum Industries, Inc., Kearny, N.J.

Filed Aug. 6, 1973, Ser. No. 386,048
Int. Cl. B44d 1/02, 5/02; D03d 27/00
U.S. Cl. 117—11 19 Claims



1. A process for producing an embossed effect on nylon pile fabric having a surface of nylon fibers which comprises,

applying to defined areas of the pile surface of said fabric a chemical embossing agent for said fibers,

said agent being blended into a liquid base vehicle and corresponding to the following formula:

$$R - \underset{R'}{N} - \underset{S}{\overset{''}{C}} - NH - R''$$

wherein R, R' and R'' may be any combination of H, N-acetyl, methyl, ethyl, butyl, isopropyl, pentyl, or hexyl, said aqueous base vehicle also including an acid,

allowing said embossing agent in its vehicle to remain in contact with said fibers for a period of time and at a temperature sufficient to reduce the height of said pile, without deterioration of said fibers and, thereafter, effectively removing the embossing agent from the fabric,

said reduction in height of the fibers being in the area contacted by said embossing agent only and being a reduction sufficient to display a significant embossed effect in the overall fabric.

3,849,160
COATING WITH PULVERULENT MIXTURES OF HYDROXY CONTAINING POLYMERS AND ε-CAPROLACTAM MASKED POLYISOCYANATES

Rolf Dhein; Hans Rudolph; Hans-Joachim Kreuder, all of Krefeld-Buckum, and Herbert Gebauer, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

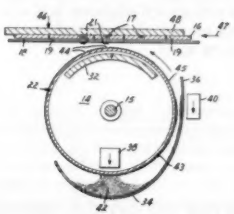
Continuation-in-part of Ser. No. 215,110, Jan. 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 78,217, Oct. 5, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,670
Claims priority, application Germany, Dec. 28, 1970, 2064098; May 8, 1971, 1957483
Int. Cl. B05b 5/02; B44d 1/095
U.S. Cl. 117—17 6 Claims

1. In the process of forming a continuous coating on an article by the steps of electrostatically spraying a pulverulent mixture of a hydroxyl group containing polymer having a softening point of at least 40°C. and a masked polyisocyanate onto the article and baking said sprayed pulverulent mixture at an elevated temperature to form said continuous coating, the improvement comprising employing as the masked polyisocyanate and ε-caprolactam masked polyisocyanate and a baking temperature of at least about 130°C.

3,849,161
MAGNETIC TONER POWDER APPLICATOR

Bryan L. Klaenhammer, Hugo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 13, 1973, Ser. No. 388,049
Int. Cl. G03g 13/00; B05b 5/02
U.S. Cl. 117—17.5 11 Claims



1. A device for applying magnetic toner powder to a transfer sheet positioned adjacent to a master source document which is magnetized to provide a discrete external magnetic field pattern of one polarity extending through said transfer sheet and a remaining background area of an opposite polarity, said device comprising:

a roller sleeve rotatively coupled to a non-rotating roller support, said sleeve having an outer layer for carrying magnetic toner powder and for depositing said powder on a surface of said transfer sheet,

means non-rotatively coupled to the roller support for providing a magnetic bias field extending over a sector of said roller sleeve, wherein a major component of said magnetic bias field reinforces said one polarity of said magnetic field pattern and opposes said opposite polarity,

thereby aiding the transfer of toner powder where said reinforcement occurs to produce a toner powder reproduction of said magnetic field pattern which is substantially free of toner powder deposition in said background area,

means for receiving a said master source document and transfer sheet in substantial contact with each other to have at least a portion of the surfaces of said document and sheet parallel to the axis of rotation of said roller sleeve,

means for transporting said contacted source document and transfer sheet with respect to said sector of the roller sleeve and for rotating said sleeve during said transporting, wherein the surface of said transfer sheet away from the source document is transported parallel to and spaced from the outer layer of the roller sleeve within said sector by a predetermined minimum distance of separation; and means for providing a magnetic field for removing excess toner powder from the outer layer of the sleeve to enable a uniform distribution of toner powder to remain on the outer layer, said powder distribution when adjacent to background areas within said sector being less than said predetermined minimum distance of separation.

3,849,162

PROCESS FOR PREVENTING THE STAINING OF POLYAMIDE FIBRE MATERIAL TREATED WITH FLUORESCENT WHITENERS

Volkmar Mueller, Arlesheim; Hans-Ulrich Berendt, Allschwil, and Melvin Harris, Arlesheim, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed May 30, 1972, Ser. No. 257,722

Claims priority, application Switzerland, June 7, 1971, 8274/71

Int. Cl. D06m *3/40*

U.S. Cl. 117—33.5 T **13 Claims**

1. A process for preventing the staining of optically-brightened synthetic polyamide fiber material, which comprises the step of applying to the fiber material at a temperature of 20° to 120°C (a) simultaneously with an optical brightener in organic solvent or (b) as an after-treatment of optically brightened fiber material, a preparation which contains a water-soluble fixing agent with affinity for the polyamide fibers, an organic solvent, and 0 to 10 percent of water, wherein the fixing agent is a polycondensation product of formaldehyde with an aryl sulphonic acid or a diarylsulphone, and wherein the optical brightening agent contains at least one water-solubilizing agent.

3,849,163

PROCESS FOR THE OPTICAL BRIGHTENING OF ORGANIC MATERIALS

Adolf Emil Siegrist, Basel; Peter Liechti, Binningen; Erwin Maeder, Aesch/Bl.; Leonardo Guglielmetti, Birsfelden; Hans Rudolf Meyer, and Kurt Weber, both of Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

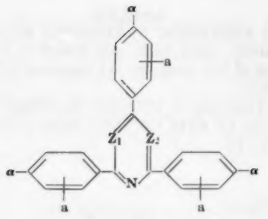
Division of Ser. No. 67,967, Aug. 28, 1970, Pat. No. 3,758,462, which is a continuation-in-part of Ser. No. 588,318, Oct. 21, 1966, abandoned. This application Oct. 5, 1972, Ser. No. 295,405

Claims priority, application Switzerland, Oct. 28, 1965, 14902/65; July 4, 1966, 9649/66

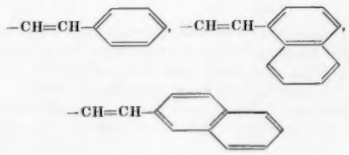
Int. Cl. D06p *5/00;* **C09b** *23/00*

U.S. Cl. 117—33.5 T **8 Claims**

1. Process for the optical brightening of organic materials, wherein there is incorporated in these materials or applied to their surfaces, 0.001–0.5 percent by weight of a compound of the formula



in which a represents hydrogen, halogen, the methyl group or the methoxy group, Z_1 and Z_2 each stands for a ring member =CH— or =N— and α for a hydrogen atom, phenyl or a radical of the series



or

in which (I) at least one radical α differs from hydrogen or phenyl and has the significance of one of the other radicals quoted for α, and in which (II) terminal phenyl or naphthyl in said α substituents are unsubstituted or substituted by 1 to 3 C_1–C_8-alkyl groups, 1 to 2 halogen atoms, a C_1–D_4-alkoxy group, a carboxylic acid, carboxylic acid ester or carboxylic acid amide group.

3,849,164

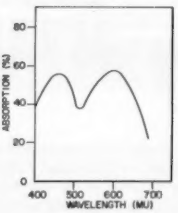
PRESSURE-SENSITIVE RECORD UNIT COMPRISING A MIXTURE OF TWO CHROMOGENIC COMPOUNDS

Helmut Schwab, Dayton; Troy Eugene Hoover, Kettering, and Chao-Han Lin, Dayton, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 89,751, Nov. 16, 1970, abandoned. This application May 9, 1972, Ser. No. 251,842

Int. Cl. B41c *1/06*

U.S. Cl. 117—36.8 **13 Claims**



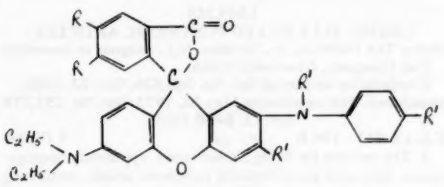
1. A pressure sensitive record unit comprising:

(a) support web or sheet material,

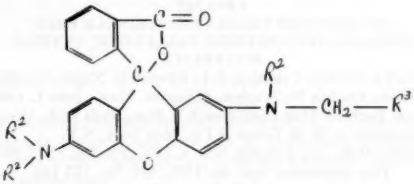
(b) mark-forming components and a releasable liquid solvent for said mark-forming components arranged in contiguous juxtaposition and supported by said sheet material,

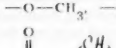
(c) said mark-forming components consisting essentially of a mixture of two colorless but colorable chromogenic compounds wherein the first chromogenic compound has

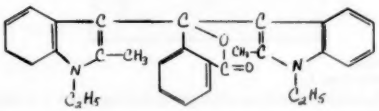
a generally green appearance and exhibitis two light absorption peaks—one in the range of 400 to 500 millimicrons and another in the range of 550 to 650 millimicrons—in its colored form and wherein the second chromogenic compound exhibits a single absorption peak in the range of 500 to 600 millimicrons in its colored form; the mixture, additionally, consisting essentially of a first chromogenic compound represented by the formula:

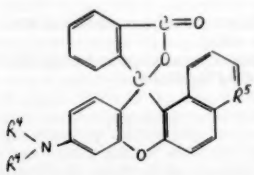


wherein each R is H or NO_2 and each R^1 is H, CH_3 or C_2H_5; or

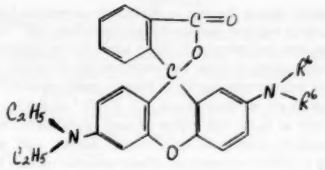


wherein each R^2 is H, CH_3 or C_2H_5 and R^3 is H, , , , , , ,  or CH_3 and a second chromogenic compound represented by the formula:

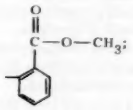


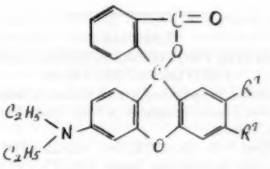


wherein each R^4 is H, CH_3 or C_2H_5 and R^5 is C or N;

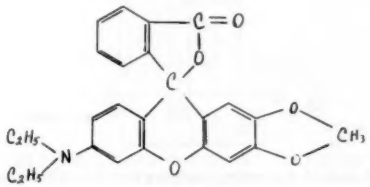


wherein one R^6 is , and the other R^6 is H, , CH_3, C_2H_5 or





wherein each R^7 is H, Cl, CH_3, C_2H_5 or —S—CH_3; or



wherein the mole ratio of the first chromogenic compound to the second chromogenic compound ranges from 1:5 to 5:1 and said mixture, on reaction with an acidic material, exhibits a neutral-colored form; and an electron-accepting material of the Lewis acid type reactive with said mixture to produce a mark; which components upon pressure-release of the liquid solvent are brought into reactive contact in the released solvent.

3,849,165

LIQUID ELECTROGRAPHIC DEVELOPMENT PROCESS

Frederick A. Stahly, August, and Stewart H. Merrill, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 149,851, June 3, 1971, Pat. No. 3,788,995. This application Aug. 13, 1973, Ser. No. 387,875

Int. Cl. G03g *9/04, 13/10*

U.S. Cl. 117—37 LE **14 Claims**

1. The process of developing electrostatic charge patterns carried on the surface of an electrographic element comprising the steps of forming said electrostatic charge patterns on said electrographic element and contacting said charge patterns with a liquid developer comprising an electrically insu-

lating carrier liquid having a dielectric constant less than about 3 and a volume resistivity greater than 10^{10} ohm-cm. and at least one polymer to develop said charge patterns, said polymer containing at least two monomeric moieties, at least one of said monomeric moieties being a polar moiety present in an amount of at least about 1.5×10^{-4} moles/g. of said polymer and at least one other of said monomeric moieties being a moiety soluble in said carrier liquid, said polymer containing a sufficient amount of said soluble moiety to yield a dispersibility ratio for said polymer in the liquid carrier greater than about 0.825, and said polar moiety being selected from the group consisting of:

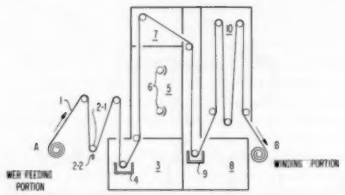
a. sulfoalkyl acrylates;
b. sulfoalkyl methacrylates;
c. metal salts of sulfoalkyl acrylates;
d. metal salts of sulfoalkyl methacrylates;
e. amine salts of sulfoalkyl acrylates;
f. amine salts of sulfoalkyl methacrylates;
g. metal salts of acids selected from the group consisting of acrylic and methacrylic acids; and
h. amine salts of acids selected from the group consisting of acrylic and methacrylic acids;

and mixtures thereof.

3,849,166
METHOD FOR PROVIDING SUBBING LAYER OF PHOTOGRAPHIC FILM

Takenori Omichi; Teppei Ikeda, and Shunichi Adachihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 16, 1972, Ser. No. 226,704
Claims priority, application Japan, Feb. 17, 1971, 46-7238
Int. Cl. B44d *1/06, 1/092*
U.S. Cl. 117—47 A **4 Claims**



1. A method of providing a subbing layer for a photographic film comprising the steps of:

(a) providing a biaxially stretched and heat-set polyethylene terephthalate film support;
(b) treating the surface of said support to impart thereto a hydrophilic property;
(c) applying to said treated surface an aqueous solution of hydrogen peroxide or an aqueous solution of hydrogen peroxide further containing a water miscible solvent;
(d) applying ultraviolet rays to said treated surface while said surface is in a wet state from step (c); and
(e) applying a hydrophilic resin solution or gelatin dispersion in a mixed organic solvent containing a solvent or swelling agent for polyethylene terephthalate to the treated surface to form thereon said subbing layer.

3,849,167
PROCESS FOR GALVANIZING HIGH CARBON STEEL WIRE

Stephen D. Polc, and Charles F. Rhein, both of Independence, Mo., assignors to Armco Steel Corporation, Middeltown, Ohio

Filed Nov. 29, 1972, Ser. No. 310,569
Int. Cl. C23c *1/02, 1/12*
U.S. Cl. 117—51 **6 Claims**

1. In a process for galvanizing high carbon steel wire wherein the steel wire in normally clean condition is subjected to a final cold drawing operation prior to galvanizing utilizing a water-soluble soap, the improvement which comprises the step of passing the wire directly from the final drawing operation into a zinc-ammonium chloride flux bath having a concentration of from 8 to 20 degrees Baume and thereafter into the zinc coating bath with the elimination of a pickling and a rinse step following the final drawing.

3,849,168
CHEMICALLY FILLED POLYMERIC ARTICLES

Henry Tice Hoffman, Jr., Trenton, N.J., assignor to American Can Company, Greenwich, Conn.

Continuation-in-part of Ser. No. 868,626, Oct. 22, 1969, abandoned. This application May 16, 1972, Ser. No. 253,775
Int. Cl. B44d *1/02*
U.S. Cl. 117—106 R **9 Claims**

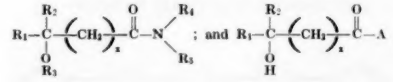
1. The process for filling a continuous, apparently homogeneous, thin solid gas-permeable polymeric article comprising the step of diffusing two diffusion compounds in the gaseous state into said thin article individually from opposite sides thereof to effect reaction between said diffusion compounds within the said solid article and resultant deposition therewithin of an immobile reaction compound.

3,849,169
METHOD FOR PRODUCING WRINKLE FREE PERMANENTLY PRESSED CELLULOSIC TEXTILE MATERIALS

Robert J. Cicione, Cranston, R.I.; Edward G. Najjar, Lincoln, Mass.; Patricia M. Scanlon, Arlington, Mass.; John L. Ohlson, Bedford, Mass., and Joseph F. Finn, Hyde Park, Mass., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 195,844, Nov. 4, 1971, Pat. No. 3,827,994. This application Apr. 20, 1973, Ser. No. 353,160
Int. Cl. D21h *1/38*
U.S. Cl. 117—143 A **12 Claims**

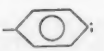
1. In a process for treating a cellulosic textile material with a cellulosic textile treating composition containing an aqueous solution of an aminoplast creaseproofing agent, the process comprising impregnating the cellulosic textile material with the aqueous solution of the aminoplast creaseproofing agent, drying the impregnated cellulosic textile material, and curing the aminoplast by heating the dried impregnated cellulosic textile material; the improvement comprising maintaining in said solution 0.5–35 percent of a material selected from the group consisting of:



in which;

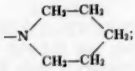
a. x is 0 or 1;
b. R_1 is hydrogen or an alkyl group having about 1–5 carbon atoms;
c. R_2 is hydrogen or an alkyl group having about 1–5 carbon atoms;
d. R_3 is hydrogen, an alkyl group having about 1–5 carbon atoms, or $-SO_3^-$;
e. R_4 is hydrogen, an alkyl group having about 1–8 carbon atoms, $-CH_2CH_2OH$; or

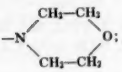
f. R_5 is hydrogen, an alkyl group having about 1–8 carbon atoms, $-CH_2CH_2OH$;



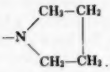
or $-CH_2OH$; and

g. A is





or



3,849,170

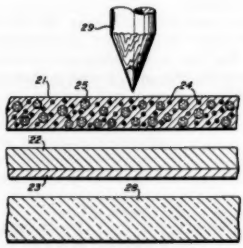
COATING COMPOSITION FOR OPTICAL PROJECTION

John D. Mays, Dayton, and Jack L. McClannan, Pittsburgh, both of Ohio, assignors to The Standard Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 130,205, April 1, 1971, abandoned. This application Jan. 9, 1973, Ser. No. 322,159

Int. Cl. B41c *1/06*

U.S. Cl. 117—36.3 **6 Claims**



1. Record sheet material comprising substrate sheet material having a pressure-sensitive, self-imaging top surface region and a bottom surface region, wherein the bottom surface region is a transfer-adhesive composition comprising a wax and a tack-regulator, wherein the top surface region and the bottom surface region are separated by a cushioning layer, wherein the wax is polyethylene having a molecular weight of about 800 to about 1200 and the tack-regulator is a tack-decreasing agent selected from the group consisting of 10% to 20%, by weight of the wax and tack-regulator combination, of paraffin having a melting point of about 135° to 175° Fahrenheit and 1% to 6%, by weight of the wax and tack-regulator combination, of poly(ethylene-vinyl acetate) having a melting point of about 128° to about 138° Fahrenheit.

3,849,171

METHOD FOR CLEANING BACKGROUND AREAS FROM DEVELOPED RECORDING SURFACES

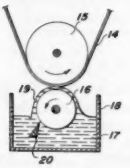
Isoji Takahashi, and Masamichi Sato, both of Asaka, Japan, assignors to Rank Xerox, Ltd., London, England

Filed Nov. 27, 1970, Ser. No. 93,313

Claims priority, application Japan, Dec. 2, 1969, 44-96397

Int. Cl. G03g *13/10, 13/22*

U.S. Cl. 117—37 LE **19 Claims**



1. A method of forming images comprising providing an electrostatographic imaging member bearing an electrostatic latent image on a recording surface, developing said electrostatic latent image with a liquid developer comprising an insulating carrier liquid and suspended toner particles whereby at least a portion of said toner particles deposit on said recording surface to form an imaged recording surface having image areas and background areas, rotating an applicator member in a cleaning liquid to form a film of said cleaning liquid on the surface of said applicator member, maintaining said applicator member free from contact with said imaged recording surface, and contacting said imaged recording surface with said film of cleaning liquid carried on the surface of said applicator member to remove toner particles deposited in said background areas.

3,849,172

ELECTROLESSLY PLATEABLE POLYMERIC COMPOSITION

James Chin, and James C. Hartley, Jr., both of New Haven, Conn., assignors to Uniroyal, Inc., New York, N.Y.

Continuation of Ser. No. 754,949, Aug. 23, 1968, Pat. No. 3,649,713. This application Mar. 13, 1972, Ser. No. 234,427

Int. Cl. B44d *1/092*

U.S. Cl. 117—47 A **6 Claims**

1. An electrolessly plated article comprising a layer of metal electrolessly deposited on and adhered to a shaped plastic substrate, said plastic substrate consisting of:

a. a terpolymer made from about 65 to 90% styrene, 5 to 35% acrylonitrile and 0.25 to 25% vinylpyridine monomers,

b. graft polymers made from 7 to 80% styrene, 3 to 34% acrylonitrile, 0.25 to 25% vinylpyridine monomers on 10 to 90% elastomeric spines selected from the group consisting of

i. polybutadiene,

ii. butadiene-styrene copolymers and

iii. ethylene-propylene-dicyclopentadiene terpolymers,

c. a blend of the terpolymer defined in (a) above in admixture with not more than 45% of a resinous ABS polymer, or

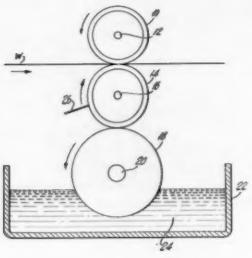
d. a blend of the graft polymer defined in (b) above in admixture with not more than 45% of a resinous ABS polymer, all of said percentages being by weight.

3,849,173

SYNTHETIC RESIN COMPOSITION AND METHODS OF UTILIZING THE SAME

Arthur H. Drelich, Plainfield, and George J. Lukacs, Perth Amboy, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed June 7, 1972, Ser. No. 260,613
Int. Cl. B44d *1/44, 1/02*
U.S. Cl. 117—62.1 **16 Claims**



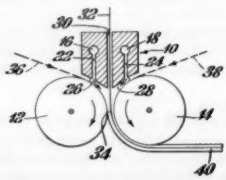
1. A method of applying a stable synthetic resin composition having an alkaline pH to porous materials and controlling the migration thereon which comprises: applying to porous materials a stable synthetic resin composition having an alkaline pH and comprising: (1) from about 0.1 percent to about 60 percent by weight on a solids basis of a synthetic resin; (2) from about 0.01 percent to about 5 percent by weight, based on the weight of said synthetic resin of a polyvalent metal complex coordination compound; and (3) a water-soluble, ionically-active ammonium or alkali metal salt of an acid capable of being chemically converted into an ionically inactive polyvalent metal salt of said acid by chemical reaction and precipitation or sequestration of said polyvalent metal salt, said salt being capable of sequestering or precipitating the metal in said polyvalent metal complex coordination compound and being present in an amount of from about 5 percent to about 90 percent molecular equivalent on a stoichiometric basis of said polyvalent metal and substantially immediately destroying the the stability of said synthetic resin composition to coagulate and precipitate the resin on said porous materials under controlled migration conditions.

3,849,174

CALENDERING OF LAMINATED POLYMERIC MATERIALS

Fred H. Ancker, Warren, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 839,292, July 7, 1969, Pat. No. 3,658,978. This application Feb. 25, 1972, Ser. No. 229,349
Int. Cl. B44d *1/44*
U.S. Cl. 117—65.2 **6 Claims**



1. In the calendering of laminated plastic materials, wherein streams of flowable plastic material and laminating webs are fed thru the nip opening of a pair of counter-rotating calender rolls, the improvement which comprises calendering while maintaining a volumetric obstruction across the width and between the pair of calender rolls, with the most downstream projection of said obstruction being positioned so as to at least penetrate the bank of material otherwise formed between the pair of calender rolls upstream of the nip by the selection of calendering conditions, and feeding streams of plastic material to said nip opening on each side of said volumetric obstruction while concurrently feeding at least one laminating web between said streams of polymeric material.

3,849,175

METHOD FOR COATING STEEL PARTS WITH ENAMEL

Friedel Kaup, Gutersloh, and Heinrich Warnke, Marienfeld, both of Germany, assignors to Miele & Cie, Gutersloh, Germany

Filed Mar. 7, 1972, Ser. No. 232,515
Int. Cl. B23p *3/00;* **C23c** *3/02*
U.S. Cl. 117—70 C **1 Claim**

1. Method for coating the surface of a steel article with an enamel coat, comprising the steps of:

a. applying to the steel surface a thin layer of metallic zinc having a thickness between about 0.3 and about 5 g/m² to provide a smooth and abrasion resistant coat thereon;

b. immersing the zinc-coated steel surface in a liquid enamel slip to form a coating of the slip on the zinc layer, and, without drying;

c. firing the slip to form an enamel outer coat on said steel article.

3,849,176

SURFACE-TREATED STEEL PLATES HIGH IN ANTICORROSIVENESS

Hidejiro Asano, and Yashichi Ouyagi, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 32,439, April 27, 1970, Pat. No. 3,677,797. This application Mar. 17, 1972, Ser. No. 235,864
Claims priority, application Japan, Apr. 28, 1969, 44-32874
Int. Cl. B44d *1/16*
U.S. Cl. 117—71 M **2 Claims**

1. An iron or steel product having, on the surface thereof, a film of a thickness of less than 1μ consisting essentially of nickel and at least one oxide selected from the group consisting of oxides of Cr, Mn and Zn with a coating of an organic resin paint on the surface of said film.

3,849,177

PROCESS EMPLOYING CATALYST COATED YARN PROCESSING ROLLS

Harold Fernandes, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Inc., Wilmington, Del.

Filed June 26, 1972, Ser. No. 266,000
Int. Cl. B65h *57/00;* **B01j** *9/00*
U.S. Cl. 117—71 R **5 Claims**

1. A process for cleaning a movable surface characterized by irregular rounded surface nodules having interstices between the nodules to prevent accumulation of deposits of organic oxidizable material when a moving textile filamentary structure bearing a coating of finish containing oxidizable organic components is contacted by said surface moving at the same speed as said structure at elevated temperatures in the presence of oxygen, said process comprising: applying to said surface a solution of soluble catalyst metal salt and a reducing agent; heating said surface to dry and reduce the metal catalyst salt to a catalytic amount of finely-divided metal particles in the interstices; moving said surface; and contacting said

moving surface with a textile filamentary structure of synthetic polymer moving at the same speed as said surface, said structure bearing a coating of finish containing oxidizable organic components, in the presence of oxygen and at a temperature of from about 100°C. up to the melting point of the synthetic polymer whereby said oxidizable organic components are oxidized.

3,849,178

THERMAL PROTECTIVE PROCESS AND ARTICLE COATED WITH THERMAL PROTECTIVE COMPOSITION

Rubin Feldman, Ladue, Mo., assignor to T.S.I., Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 93,416, Nov. 11, 1970, abandoned. This application Apr. 10, 1972, Ser. No. 242,733

Int. Cl. C09k *3/28*; **C09d** *5/18*

U.S. Cl. 117—72 **36 Claims**

1. A process of protecting at least a part of an element from flame or extreme thermal conditions comprising applying to said part of said element a protective composition, at least a substantial part of said composition intumescing to form a continuous porosity matrix and undergoing an endothermic phase change from a solid to a vapor in a well-defined predetermined temperature range below the temperature of said flame or thermal extreme.

3,849,179

INTERNALLY COATED REACTION VESSEL AND PROCESS FOR COATING THE SAME

Marion G. Morningstar, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,880

Int. Cl. C08f *1/98, 3/30*; **C23f** *14/02*

U.S. Cl. 117—97 **12 Claims**

1. A process for substantially reducing the build-up of polymer on the internal surfaces of a reaction vessel used in the dispersion or emulsion polymerization of polymerizable ethylenically unsaturated monomers which comprises applying to said surfaces an aqueous coating solution comprised predominantly of polymeric polyethyleneimine and having a solids content of about 5 to about 20 percent by weight, and thereafter drying and curing said coating to insolubilize the same.

3,849,180

PROCESS FOR BONDING PARTICULATE SOLID MATERIALS TO A SUBSTRATE

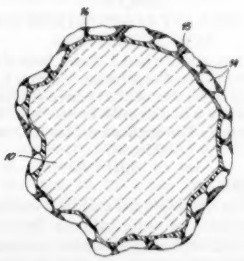
Reinhold Schulze, Hamburg, Germany, assignor to Norddeutsche Affinerie, Hamburg, Germany

Filed May 24, 1972, Ser. No. 256,323

Claims priority, application Germany, May 25, 1971, 2125781

Int. Cl. B44d *1/02*

U.S. Cl. 117—100 B **7 Claims**



1. A process for bonding a particulate active solid consisting of stannic acid to pieces of a substrate, which comprises depositing said particulate active solid upon said pieces of said substrate from an aqueous medium in the presence of a flocculating system consisting of two successively introduced flocculating agents, at least one of said agents having an affinity for the active solid while said agents are interactive to form a bonding substance adhering the active solid to said pieces of substrate in a porous layer, said pieces consisting of coke breeze, silica, alumina, a silicate aluminate or an aluminosilicate, said agents having respectively the general formula R — A and R′ — B wherein R and R′ are homopolymer, copolymer or mixed polymer groups consisting of maleic, vinylic, acrylic, methacrylic or styrenic repeating units and A and B represent respectively acid and basic functionality.

3,849,181

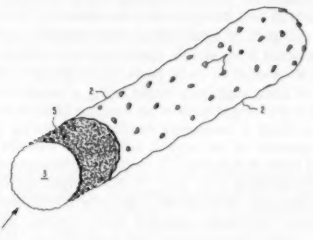
PRODUCT AND PROCESS

James Ralph Green, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 35,064, May 6, 1970, abandoned. This application June 30, 1972, Ser. No. 268,024

Int. Cl. C23c *13/04*

U.S. Cl. 117—106 R **16 Claims**



1. A high strength polycrystalline refractory oxide fiber having a diameter between about 3 and 250 microns and comprised of grains having a median grain diameter of

less than about 3 microns and

less than about 10 percent of said fiber diameter,

said fiber having adhered thereto a vitrified coating consisting essentially of a glass-forming oxide, in the form of an optically uniform layer, the apparent thickness of said coating being

less than about 1 micron,

less than about 5 percent of said fiber diameter and less than ½ said median grain diameter.

3,849,182

HIGHLY SHAPE-CLASSIFIED OXIDIZED LOW CARBON HYPEREUTECTOID ELECTROSTATOGRAPHIC STEEL CARRIER PARTICLES

Robert J. Hagenbach, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 834,862, June 19, 1969, abandoned. This application June 11, 1973, Ser. No. 369,036

Int. Cl. B44d *1/094*; **G03g** *9/02*

U.S. Cl. 117—100 M **9 Claims**

1. A highly shape-classified low carbon hypereutectoid electrostatographic steel carrier material having an average particle size between about 50 microns and about 1,000 microns and a specific gravity of at least about 7 grams per cubic centimeter wherein said steel carrier material has been heat treated to a tempered martensitic microstructure with an average hardness of 40–55 Rockwell C, said heat treatment being in an air or oxygen atmosphere at temperatures ranging between about 500°F and about 1,000°F to provide an oxide surface layer comprising Fe_3O_4 on said steel carrier material, said oxide surface layer having a thickness between about 0.2 and about 5.0 microns, said steel carrier material comprising

carrier cores having a composition comprising about 95.0 to 99.0 parts iron, 0.1 to 2.0 parts carbon, 0.5 to 2.0 parts manganese, 0.5 to 2.0 parts silicon, 0.03 to 0.1 parts aluminum, 0.01 to 0.05 parts phosphorus, and 0.02 to 0.05 parts sulphur, said carrier cores being overcoated with a resinous coating material capable of electrostatically releasing toner particles adhered thereto to an electrostatic latent image.

3,849,183
PAPER COATED WITH COMPOSITIONS OF POLYMERIC MATERIALS

Orest Nicholas Chick, Sarnia, Ontario, and Graham Neville Means, Petrolia, Ontario, both of Canada, assignors to Polysar Limited-Polysar Limited, Sarnia, Canada

Division of Ser. No. 307,407, Nov. 17, 1972, , which is a continuation-in-part of Ser. No. 204,762, Dec. 3, 1971, Pat. No. 3,809,666. This application Feb. 13, 1974, Ser. No. 442,200

Int. Cl. D21h *1/34;* **C08d** *7/00;* **B32b** *23/08*

U.S. Cl. 117—155 UA **4 Claims**

1. Paper coated with a composition having a pH of 7–11 and comprising a latex blend, a filler and an adhesive, said filler being selected from finely divided clay, calcium sulfoaluminate, calcium carbonate, alumina, silica, titania, zinc oxide and colorants and being present in amount of 1–20 parts by weight per part of latex blend (dry weight), said adhesive being selected from starch, casein and soy protein and being present in amount of 3–30 parts by weight per 100 parts by weight of filler, said latex blend being a blend of (A) 10–40 parts on a dry weight basis of an aqueous latex of a copolymer prepared from a monomer mixture comprising (1) 30–15 weight percent of an acyclic conjugated diolefin monomer selected from butadiene-1,3, isoprene, chloroprene and 2,3-dimethylbutadiene-1,3, (2) 70–85 weight percent of a monoolefinically unsaturated copolymerizable monomer free of carbonyl structures selected from styrene, alpha-methyl styrene, alpha-chlorostyrene and vinyl toluene, and (3) 0–10 weight percent of an olefinically unsaturated carboxylic acid selected from the groups consisting of (a) unsaturated carboxylic acids containing 3–5 carbon atoms, (b) cinnamic acid, and (c) mixtures of (a) and (b); (B) 90–60 parts on a dry weight basis of an aqueous latex of a copolymer prepared from a monomer mixture comprising (1) 0.1–5 weight percent of an olefinically unsaturated carboxylic acid as defined in subsection (A) (3), (2) 0.1–5 weight percent of an olefinically unsaturated carbonyl compound selected from acrolein, alpha-methyl, beta-methyl and beta-phenyl acroleins, methyl vinyl ketone and mixtures thereof, (3) 90–99.8 weight percent of monomers composed of 60–30 parts of an acyclic conjugated diolefin monomer as defined in subsection (A) (1) and 40–70 parts of a monoolefinically unsaturated copolymerizable monomer free of carbonyl structures as defined in subsection (A) (2).

3,849,184
TREATMENT OF PAPERBOARD

Allan Roberts, deceased, late of Upminster, England (by Margaret Agnes Roberts, executrix), assignor to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 27,121, April 9, 1970, abandoned. This application Dec. 16, 1971, Ser. No. 208,896

Claims priority, application Great Britain, Apr. 18, 1969, 19836/69

Int. Cl. D21h *1/40*

U.S. Cl. 117—155 UA **4 Claims**

1. A coated paperboard comprising:

i. a paperboard consisting of at least one ply consisting essentially of cellulosic fibrous materials, and

ii. a coating on at least one surface thereof comprising:

a. 95 to 99 percent by weight of a water-soluble lignosulphonate salt and

b. from 1 to 5 percent by weight of a non-reactive hydrophobic waxy material having a melting point higher than the temperature of application of said coating to said paperboard

said paperboard having a thickness of 0.004 to 0.050 inch and a basis weight of 130 to 850 g/m², said coating being present in an amount effective to improve the physical strength characteristics of said paperboard.

3,849,185
METHOD OF PREPARING SURGICAL SUTURES

Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, both of N.J., assignors to National Patent Development Corporation, New York, N.Y.

Division of Ser. No. 32,448, April 27, 1970, Pat. No. 3,674,901, which is a continuation-in-part of Ser. Nos. 567,856, July 26, 1966, Pat. No. 3,520,949, and Ser. No. 650,259, June 30, 1967, abandoned, which is a division of Ser. No. 654,044, July 5, 1967,. This application Dec. 13, 1971, Ser. No. 207,583

Int. Cl. B44d *1/09*

U.S. Cl. 117—161 UB **5 Claims**

1. A method of preparing a suture comprising coating a surgical suture fiber with a casting syrup of hydroxyethyl or hydroxypropyl acrylate and then completing the polymerization of the acrylate.

3,849,186
ELASTOMERIC SHIELD FOR AN ELECTRICAL CONDUCTOR CONNECTOR MODULE AND METHOD OF MAKING SAME

Henry N. Tachick, Pittsfield, and Richard H. Arndt, Lenox, both of Mass., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 168,170, Aug. 2, 1971, Pat. No. 3,793,614. This application July 2, 1973, Ser. No. 375,827

Int. Cl. B44d *1/18*

U.S. Cl. 117—201 **1 Claim**

1. A method of manufacturing an electrical conductor connector module, comprising:

1. providing an insulating housing having an elongated passageway extending through it,
2. inserting a plug into said passageway to seal off a portion of the passageway from the remainder thereof,
3. inserting a hollow tube into the unplugged end of the passageway, said tube forming a fluid tight seal with the passageway thereby to mask its walls from contact with a fluid introduced into the passageway through the tube,
4. introducing a body of fluid elastomeric, electrically conductive material in an uncured state into said passageway through said tube thereby coating the unmasked section of the passageway with said material,
5. draining the surplus coating material from said passageway, and curing said coating of electrically conductive material, and
6. removing the plug and tube from said housing.

3,849,187
ENCAPSULANT COMPOSITIONS FOR SEMICONDUCTORS

Charles A. Fetscher, and Michael J. Rosso, both of Olean, N.Y., assignors to The Dexter Corporation, Windsor Locks, Conn.

Continuation of Ser. No. 65,272, March 8, 1970, abandoned, which is a continuation of Ser. No. 700,726, Jan. 26, 1968, abandoned. This application Mar. 27, 1972, Ser. No. 238,697

Int. Cl. H01l *7/00*

U.S. Cl. 117—201 **20 Claims**

1. A method for improving the electrical insulating properties and compatibility of semiconductor devices that comprises directly, and without passivation, encapsulating said semiconductor devices with an encapsulant consisting essentially of an uncured epoxy resin; a curing agent for said epoxy resin selected from the group consisting of amine, phenolic

novolacs and anhydrides; and from about 0.05 to 5 percent by weight based upon the total weight of said encapsulant of a lower alkyl poly-lower alkoxy silane having a substituent in the alkyl group reactive with said epoxy resin and being a member selected from the group consisting of amine and epoxy substituents; and, curing said encapsulant, said silane imparting enhanced compatibility between said epoxy resin and the components of said semiconductor devices such that said encapsulated semiconductor devices are resistant to failure under reverse bias at high temperature and resistant to change when subjected to boiling water.

3,849,188

ELECTROSTATIC IMAGE-RECORDING MEDIUM AND METHOD OF MAKING SAME

Kensuke Suzuki, Fuji City; Yasuhide Goto, Numazu City; Kazunari Iwasaki, and Yoshiharu Sumitomo, both of Fuji City, all of Japan, assignors to Kabushiki Kaisha Kohjin, Tokyo, Japan

Filed Mar. 31, 1972, Ser. No. 239,999

Claims priority, application Japan, Apr. 5, 1971, 46-20372; Dec. 16, 1971, 46-101446

Int. Cl. G03g *5/00, 7/00*

U.S. Cl. 117—201 **10 Claims**

1. An electrostatic image-recording medium comprising a dielectric layer provided on a conductive base support, said dielectric layer being composed of a linear polymer having a specific volume resistivity of over $10^{12}\Omega$-cm that is soluble in a solvent selected from the group consisting of aromatic hydrocarbons, ketones and esters and polycarbonate resin which is soluble in a halogenated hydrocarbon dispersed in said linear polymer.

3,849,189

FLUX COATED ELECTRODE

Lazar Matveevich Yarovinsky, Sharikopodshipnikovskaya ulitsa, 2, kv. 6, Moscow, and Alexei Ilich Rumyantsev, Nagornaya ulitsa, 36, Vsevolzhsky Leningradskoi oblasti, both of U.S.S.R.

Division of Ser. No. 763,405, Sept. 27, 1968, abandoned. This application Apr. 20, 1972, Ser. No. 245,810

Int. Cl. B23k *35/22, 35/24*

U.S. Cl. 117—205 **1 Claim**

1. An electrode for building up parts whose surfaces are exposed to friction at temperatures of up to 650°C with an iron-base alloy which will have a high hardness at this temperature and be scratch resistant, said electrode comprising a core, and a coating on said core which consists essentially of 10 to 30 percent of calcium carbonate, 8 to 30 percent of fluor spar, 3 to 10 percent of titanium dioxide, 10 to 30 percent of ferromolybdenum, 1.0 to 8.0 of ferrocolumbium, 10 to 40 percent of ferrosilicon, 0 to 10 percent of metallic manganese, and 0 to 10 percent of metallic chromium based on the total coating weight, said core consisting of chrome-nickel austenitic steel containing 17 to 21 percent of chromium, 7.5 to 11.0 percent of nickel, 0 to 5 percent of molybdenum, 0 to 1.3 percent of columbium, and 0 to 6 percent of manganese, the balance being iron.

3,849,190

DIELECTRIC GLASS OVERLAYS AND METHOD FOR PRODUCING SAID GLASS COMPOSITIONS

Betty J. Foster, and Rao R. Tummala, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1973, Ser. No. 353,051

Int. Cl. H01j *9/00;* **B44d** *1/09, 1/14*

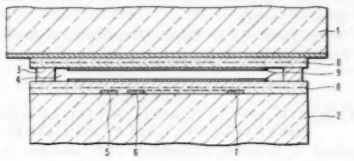
U.S. Cl. 117—219 **13 Claims**

1. In a method for fabricating a gas panel display cell array structure having at least one glass substrate having a planar surface with electrically conductive metal contacts thereon and a dielectric composite glass material overlying said planar surface and said electrically conductive metal contacts, and wherein the improvement in said method comprises the following steps in the order recited:

a. coating said planar surface of said glass substrate with said electrically conductive metal contacts thereon with a first slurry containing an organic dispersion medium and a first glass frit;

b. coating said planar surface of said glass substrate with said electrically conductive metal contacts thereon and coated with said first slurry containing said first glass frit with a second slurry containing an organic dispersion medium and a second glass frit where said second glass frit has a higher softening temperture and viscosity than said first glass frit;

c. gradually heating said coatings in an atmosphere selected from the group consisting of nitrogen, oxygen and air to a temperature approximately equal to the softening temperature of said glass substrate to evaporate said organic dispersion mediums thereby forming dry coatings;



d. maintaining said coatings at said temperature approximately equal to the softening temperature of said glass substrate for a time interval to form a composite having an integrally diffused interface of two distinct glass compositions; and

e. gradually cooling said coatings to room temperature.

8. In a glass panel display cell array structure, a soda lime silica glass substrate having at least one planar surface and electrically conductive metal contacts on said planar surface of said substrate, wherein the improvement comprises: a dielectric glass overlay said contacts and said planar surface of said glass substrate, said dielectric glass overlay comprising first and second glass compositions having a diffused interface, said first glass composition consisting essentially of any one of the compositions A, B and C, as set forth in the following table:

	Composition A in weight per cent	Composition B in weight per cent	Composition C in weight per cent
Pbo	73.5	70	72
B_2O_3	12.7	15	6.5
SiO_2	13.6	9	17
Al_2O_3	0.2	6	4.5

said seccond glass composition consisting essentially of any one of the compositions D, E and F as set forth in the following table:

	Composition D in weight per cent	Composition E in weight per cent	Composition F in weight per cent
SiO_2	55	10	56
Na_2O	6	10	0
K_2O	3	0	0
B_2O_3	25	50	26
Al_2O_3	1	20	2
BaO	4	5	5
CaO	1	0	0
Li_2O	5	0	11
Ti_2O	0	5	0

3,849,191
PHOTOGRAPHIC ARTICLES AND MATERIALS USEFUL IN THEIR MANUFACTURE

Howard F. Earhart; Frederick J. Jacoby, and Clemens B. Starck, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 596,803, Nov. 25, 1966, Pat. No. 3,516,832. This application Oct. 2, 1969, Ser. No. 870,776
Int. Cl. G03c *1/32*
U.S. Cl. 117—226 **5 Claims**

1. An article of manufacture comprised of a light impermeable sheet and uniformly coated on one surface of said light impermeable sheet a low-friction, antistatic, antiblocking coating which consists essentially of by weight,

a. from about 30 to about 55 percent of substantially spherical, polymeric beads having an average diameter of from about 0.5 to about 25 microns, said beads being substantially insoluble in a 30:70 by weight mixture of acetone and water;

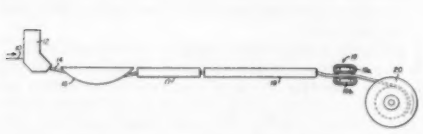
b. from about 10 to 33 percent of low viscosity cellulose nitrate, said low viscosity cellulose nitrate having an intrinsic viscosity in acetone at 25°C of from about 0.4 to about 1.5; and

c. from about 25 to about 60 percent of finely divided carbon black.

3,849,192
METHOD OF APPLYING AND COOLING LOW DENSITY POLYETHYLENE CABLE INSULATION

Gertraud A. Schmidt, Eatontown, N.J., assignor to General Cable Corporation, Inc., New York, N.Y.

Filed May 12, 1972, Ser. No. 252,871
Int. Cl. B44d *1/42, 1/44*
U.S. Cl. 117—232 **10 Claims**



1. The method of applying and shrinking polyethylene insulation over metal conductors of electric cables having insulation of a radial thickness of substantially 0.345 inch and having a maximum shrinkage within a critical range from about 120° C to about 100° C and a ratio of outside diameter to inside diameter greater than about 1.3:1 which method comprises;

a. Extruding the polyethylene over a conductor with the polyethylene at a temperature substantially higher than the melting point of the polyethylene,

b. Advancing the cable from the region of extrusion and along a substantially catenary course into a first cooling zone, the temperature of the polyethylene being substantially higher than 120° C,

c. Maintaining the temperature of the outside of the insulation in the first cooling zone at least as high as approximately the melting point of the polyethylene,

d. Continuing the immersion of the cable in the first zone with the heat absorbing capacity of the conductor and the temperature of the zone sufficient to cool the insulation at the outlet end of the first zone to a radial temperature gradient within about 20 percent of the temperature of the outside of the insulation,

e. Advancing the cable from the first zone into a second zone,

f. Maintaining the temperature of the second zone and the time of immersion of the cable in the second zone to cool the outside of the insulation below 100° C, the lower limit of maximum shrinkage of the polyethylene, while maintaining the radial temperature gradient in the polyethylene within a range of about 30 percent of the highest temperature within the radial extent of the insulation at every instant during the cooling in the second zone, and

g. Maintaining the radial temperature gradient within said 30 percent range until all of the polyethylene has cooled below the 100° C so as to distribute shrinkage stresses more uniformly throughout the radial thickness of the insulation.

3,849,193
METHOD OF PREPARATION OF SINGLE CRYSTAL FILMS

Bernard Ferrand; Francis Forrat; Yves Grange, all of Grenoble; Jean-Claude Joubert, Venon, and Jean Mareschal, Gieres, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 22, 1972, Ser. No. 255,549
Claims priority, application France, May 25, 1971, 71.18889
Int. Cl. H01f *10/02*
U.S. Cl. 117—235 **10 Claims**

1. A method of preparation of a single-crystal thin film of a rare earth mixed oxide having a garnet structure of the formula $T_3M_5O_{12}$ where M represents iron and T represents yttrium, the steps of placing a single-crystal substrate in an aqueous solution in an autoclave which contains compounds having a base of constituents to form the single-crystal film by liberating said constituents in situ by double decomposition, bringing said solution to a high temperature and high pressure to dissolve said constituents and then depositing said constituents by recrystallization on said single-crystal substrate, a temperature difference within the range of 20°C to 70°C being maintained between dissolution and deposition of the constituents.

3,849,194
LOW D.E. STARCH CONVERSION PRODUCTS

Frederick C. Armbruster, and Earl R. Kool, both of La Grange, Ill., assignors to CPC International Inc., Engelwood Cliffs, N.J.

Continuation of Ser. No. 602,563, Dec. 19, 1966, abandoned. This application Sept. 17, 1971, Ser. No. 181,566
Int. Cl. C12b *1/00;* **C13k** *1/06*
U.S. Cl. 127—29 **14 Claims**

1. A process for producing a waxy starch hydrolysate which comprises treating in a first step an aqueous slurry of waxy starch with a bacterial alpha-amylase enzyme at a temperature above about 85°C. to liquefy the waxy starch and to provide an aqueous solution containing a liquefied waxy starch, then subsequently in a second step, at reduced temperatures below about 85°C, treating said liquefied waxy starch with a bacterial alpha-amylase enzyme to saccharify the waxy starch and to achieve a waxy starch hydrolysate having a dextrose equivalent value from about 5 to about 25, stopping the saccharification reaction and recovering the waxy starch hydrolysate so produced.

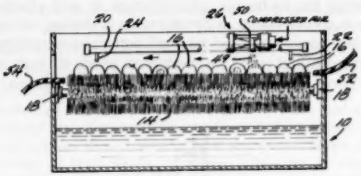
3,849,195
ULTRASONIC CLEANING

Harry C. Powell, Jr., Faber, Va. 22938, and Donald W. Floyd, Rt. 2, Box 36, Afton, Va. 22920

Filed Aug. 3, 1972, Ser. No. 277,640
Int. Cl. A23n *13/00;* **B08b** *7/02*
U.S. Cl. 134—1 **4 Claims**

1. Apparatus for ultrasonically cleaning the surfaces of articles comprising: a transducer for generating a beam of ultrasonic vibrations in the surrounding atmosphere; conveyor means for transporting an article transversely through the beam and for simultaneously revolving and brushing the article, said means including two closely spaced parallel brushes rotatably driven in the same direction; liquid application

means for wetting the surface of the article carried by the conveyor means with a film of liquid before the article enters



the beam; and rinse means for rinsing the article after it has been exposed to the beam.

3,849,196

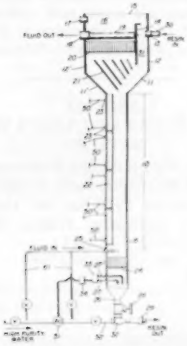
ULTRASONIC CLEANING OF RESIN

James H. Halloway, Tracy, and George E. Petersen, Frement, both of Calif., assignors to General Electric Company, San Jose, Calif.

Division of Ser. No. 39,030, May 20, 1970, abandoned. This application Aug. 17, 1972, Ser. No. 281,512

Int. Cl. B08b *3/10*

U.S. Cl. 134—1 **7 Claims**



1. A method of cleaning contaminated ion exchange resins comprising the steps of

a. introducing the ion exchange resin and a carrier fluid to a treatment zone in a countercurrent flow so that a turbulent condition results in the treatment zone and a hydraulic classification of the resin particles is achieved,

b. simultaneously applying the ultrasonic energy across the treatment zone to remove the contamination from the resin,

c. collecting the cleaned resin in the treatment zone,

d. removing the carrier fluid carrying the contamination removed from the resin from the treatment zone and

e. educting the cleaned resin from the treatment zone in a fluid medium.

3,849,197

METHOD AND APPARATUS FOR DECONTAMINATING A RINSE LIQUID

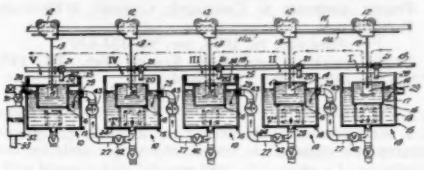
Benjamin J. Sorrentino, 43 Vermont Ave., Stratford, Conn. 06497

Filed Mar. 8, 1973, Ser. No. 339,402

Int. Cl. B08b *7/04*

U.S. Cl. 134—10 **10 Claims**

1. Apparatus for treating water in which work coming from a plating tank has been rinsed, comprising a series of holding tanks; means for conducting rinse water to a first holding tank; means for conducting batches of rinse water from tank to tank, certain of said tanks having outer shells and work-treating inner shells, the latter being adapted to be filled to overflowing with water and so positioned in the outer shells that water in said inner shells may overflow into said outer shells; means for immersing successive batches of work into the water in said inner shells to rinse the work, the immersion



of the work causing the water in the inner shells to overflow into the outer shells; means for maintaining a uniform level of water in the outer shells of the tanks as it flows from tank to tank, the water in at least several of the outer shells being accessible for chemical testing and being open to receive chemicals to treat the water; and means for discharging rinse water from the outer shell of the terminal tank of a series of tanks for the disposal or reuse of the treated rinse water.

3,849,198

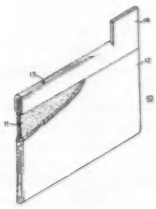
IRON ELECTRODE PASTE FOR ALKALINE BATTERY PLATES

Joseph Seidel, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1973, Ser. No. 384,320

Int. Cl. H01m *43/04*

U.S. Cl. 136—25 **7 Claims**



1. A negative electrode containing an active battery electrode paste mixture comprising:

A. a solid component comprising:

1. about 70–100 parts of coarse iron particles selected from the group consisting of iron oxide, iron oxide hydrate and mixtures thereof, having an average particle size of between about 5 to about 85 microns diameter;

2. about 5–30 parts of fine iron particles selected from the group consisting of iron oxide, iron oxide hydrate and mixtures thereof having an average particle size of up to about 1 micron diameter;

3. about 1–5 parts of a reaction promoting additive selected from the group consisting of sulfur, selenium, tellurium and their compounds;

4. about 0.02–1 parts of a water-soluble dispersing agent; and

5. about 0.02–0.5 parts of a water-soluble cellulosic thickener;

B. water, wherein the solids:water weight ratio is between about 5:1 to 2:1 and the specific gravity of the paste is between about 2–3 grams/cu. cm.

3,849,199

ELECTROCHEMICAL GENERATOR WITH A ZINC ELECTRODE

Georges Feuillade, Arpajon, and Paul Cord, Paris, both of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Feb. 16, 1973, Ser. No. 333,420
Claims priority, application France, Feb. 24, 1972, 72.06294; Feb. 25, 1972, 72.06491
Int. Cl. H01m *43/02*
U.S. Cl. 136—30 **20 Claims**

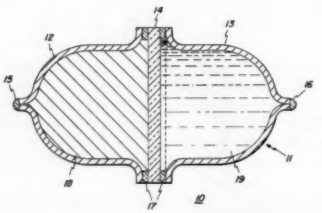
1. An electrochemical storage cell comprising a positive electrode, a negative electrode comprising a collector core consisting of a chemically inert metallic grid covered with a substance containing zinc, an electrolyte consisting of an aqueous basic solution of an alkaline polyacid phosphate salt in a concentration such that the pH be maintained substantially constant and at a predetermined value or range of values, wherein said substance containing zinc is a heat hardening substance having a composition by weight of 10 to 100 parts of said alkaline polyacid phosphate salt, 50 to 200 parts of zinc or a compound containing zinc, and 2 to 20 parts of at least an oxide of a metal selected from the group consisting of the elements in columns IIA and IIIB of the periodical classification and lithium, and wherein said electrolyte includes at least one alkaline halide.

3,849,200

SEALED SODIUM-IODINE BATTERY

Richard J. Charles, Schenectady, and Stephan P. Mitoff, Elnora, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 18, 1971, Ser. No. 154,550
Int. Cl. H01m *13/00*
U.S. Cl. 136—83 R **2 Claims**



1. A sealed sodium-iodine battery operable at a temperature of approximately 120°C consisting of a casing, a liquid sodium anode positioned in the casing, a solid sodium beta-alumina ion-conductive electrolyte adjacent the anode, and a liquid iodine cathode positioned adjacent the opposite side of the electrolyte.

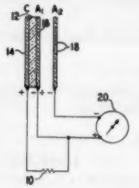
3,849,201

ANODE AND SENSING CELL FOR HYDRAZINE FUEL CELL

Karl V. Kordesch, Lakewood, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 871,321, Oct. 30, 1969, abandoned, which is a division of Ser. No. 659,154, Aug. 8, 1967, abandoned. This application Mar. 23, 1972, Ser. No. 237,510
Int. Cl. H01m *27/12*
U.S. Cl. 136—86 B **5 Claims**

1. In combination with a hydrazine fuel cell battery comprising at least one hydrazine anode, at least one oxidant cathode and an electrolyte in contact with said anode and cathode and containing dissolved hydrazine; a device for controlling the hydrazine concentration in said electrolyte, said device comprising, in combination; a sensing cell operably independent from said fuel cell battery, said sensing cell comprising a first (working) hydrazine anode through which current flows when said device is in operation, a second (reference) hydrazine anode and an oxidant cathode, said first and second anodes and said cathode being in contact with said hydrazine-containing electrolyte; means for measuring the potential difference between said first anode and said second anode; a spacer between said cathode and said first anode for preventing gross contact of hydrazine with said cathode; a load resistance connected across said cathode and said first anode and means for adding hydrazine to said electrolyte in response to changes in said potential difference.

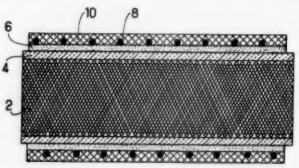


3,849,202

METHOD OF MANUFACTURING A METAL-AIR BATTERY

Jean-Paul Pompon, Vitry sur Seine, France, assignor to Compagnie General D'Electricite, Paris, France

Filed Dec. 20, 1972, Ser. No. 316,785
Claims priority, application France, Dec. 20, 1971, 71.45734; June 26, 1972, 72.22961
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 A **5 Claims**



1. A method of manufacturing electrochemical storage battery elements having an inside space for the flow of an alkaline solution containing a powered metal in suspension and an outside space for the flow of an oxidising gas, said method comprising the steps of

producing a coaxial tubular structure comprising, from the inside towards the outside, the following layers in contact with one another:

a metallic, unalterable, negative collector, permeable to said alkaline solution and capable of withstanding a radial compression,

a porous, water-repellant, insulating, unalterable separator permeable to said alkaline solution but not to said powered metal in suspension,

a porous and electronically conductive active layer enabling, within itself, a reducing reaction for the said oxidising gas in contact with the said alkaline solution, and

a fine grid;

fitting around said coaxial tubular structure a tubular sleeve composed of an unalterable metal which may undergo deformation and which is perforated with holes so that the metal segments remaining between the holes do not form any continuous line throughout its whole length parallel to the axis of said tubular sleeve, and

subjecting said tubular sleeve to traction parallel to its axis, thereby increasing its length and decreasing its cross-sectional area by plastic deformation until said coaxial tubular structure is permanently radially compressed by said tubular sleeve, said tubular sleeve thereupon constituting, at least partly, a positive collector in electrical contact with said porous and electrically conductive active layer.

3,849,203

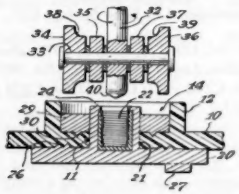
METHOD FOR PRODUCING BATTERY TERMINAL

Norman E. Hollis; Gottfried W. Jutte; Frank I. McCartney, all of Indianapolis, Ind., and John V. McHugh, Evanston, Ill., assignors to The Richardson Company, Des Plaines, Ill.

Continuation of Ser. No. 199,453, Nov. 17, 1971, abandoned. This application Aug. 31, 1973, Ser. No. 393,511

Int. Cl. H01m *1/02*

U.S. Cl. 136—135 S **2 Claims**



1. A method for producing a terminal member for a battery case adapted for making connections between an external cable and plates of a battery cell; said terminal comprising an enlarged base provided with a bushing extending laterally from one surface of said base, a locking ring member positioned so that said bushing passes through said ring member, a lip formed from said bushing and in contact with a said ring member, and a peripheral depression in said ring member; which method comprises swaging on said bushing and locking ring member producing friction and resulting heat to deform: (1) said bushing to form said lip; and (2) said locking ring member to form said peripheral depression.

3,849,204

PROCESS FOR THE ELIMINATION OF INTERFACE STATES IN MIOS STRUCTURES

Alan Bicksler Fowler, Yorktown, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,283

Int. Cl. H01l *7/54*

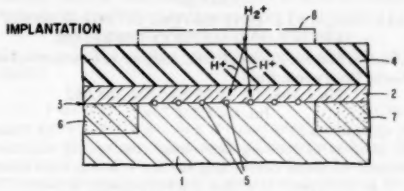
U.S. Cl. 148—1.5 **13 Claims**

1. In a fabrication process for forming semiconductor devices having a semiconductor

an oxide layer on a surface of said substrate, an insulating layer on said oxide layer and have interface states at the oxide and substrate interface,

said insulatingmaterial being pervious to diffusion of gases through it only at high temperatures on the surface of said oxide layer. the improvement comprising the steps of:

implanting hydrogen ions at said interface region which is capable of entering the lattice of said substrate, and



annealing said substrate in an inert atmosphere for a time and temperature sufficient to substantially eliminate interface states.

3,849,205

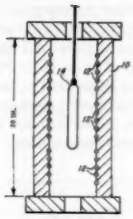
ENHANCEMENT OF SOLID STATE RECRYSTALLIZATION BY INDUCED NUCLEATION

Maurice J. Brau, Richardson, and Richard A. Reynolds, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 27, 1973, Ser. No. 391,110

Int. Cl. B01j *17/02;* **H01l** *3/20*

U.S. Cl. 148—1.6 **8 Claims**



1. A method for enhancement of solid state recrystallization of a polycrystalline ternary semiconductor compound consisting of the step of melting a portion of a polycrystalline ternary semiconductor compound ingot and allowing single crystal growth from the liquid to occur at the liquid-solid interface whereby a single crystal nucleus is formed at the liquid-solid interface.

3,849,206

DENSIFICATION OF HARD CHROME PLATED SURFACES

Louis John Jacobs, Chicago, Ill., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 2, 1973, Ser. No. 320,217

Int. Cl. C23f *7/26*

U.S. Cl. 148—6.2 **3 Claims**

1. A method of treating metal parts having chrome plating thereon wherein said chrome plating contains pores and cracks comprising the steps of:

a. applying a solution to said chrome plated metal parts whereby solution penetrates said pores and cracks, said solution consisting essentially of a chromic acid solution having a specific gravity of from 1.64 to 1.66; and

b. heating said chrome plated metal parts having said chromic acid applied thereto to a temperature of about 230°F ± 10°F, gradually heating to a temperature of 700°F ± 50°F, permitting said temperature to stabilize at 700°F ± 50°F throughout said part and then rapidly heating said

part to 1,200°F to convert said chromic acid to chromic oxide.

3,849,207

ALUMINUM ELEMENT HAVING INTEGRAL SEPIA SURFACE AND METHOD THEREFOR

Michael N. Marosi, Encino, Calif., assignor to Convertex, Ltd., North Hollywood, Calif.

Filed Aug. 13, 1973, Ser. No. 388,062
Int. Cl. C23f *7/00*
U.S. Cl. 148—6.27 **13 Claims**

1. Method of forming sepia-tone coatings on aluminum structural elements comprising surface reacting the element for 10 to 30 minutes in a bath at a temperature between 170° and 190°F, said bath having a pH of between 9 and 10 and consisting essentially of 0.1 to 3 percent by weight alkali metal formate and water; rinsing the surface, and thereafter overcoating with a clear, colorless resinous film.

3,849,208

WHITE, OPAQUE CONVERSION COATING ON ALUMINUM

Michael N. Marosi, Encino, Calif., assignor to Convertex, Ltd., Los Angeles, Calif.

Filed Aug. 13, 1973, Ser. No. 388,065
Int. Cl. C23f *7/00*
U.S. Cl. 148—6.27 **19 Claims**

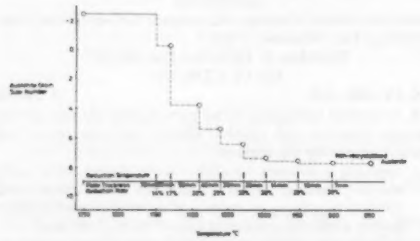
1. Method of forming opaque white conversion coatings on aluminum structural elements comprising caustic etching and cleaning the surface, surface reacting the element for **5** to **30** minutes in a bath at a temperature between **50°** and **110°F**, said bath having a pH not less than **3.3** and not more than **4**, and consisting essentially of from **10** to **20** percent by weight halide ion, and from **2** to **20** percent by weight of a saturated, di- or tri- carboxylic acid having from two to eight carbon atoms and water, rinsing the surface and thereafter overcoating with a clear, colorless resinous film.

3,849,209

MANUFACTURING METHOD OF HIGH TENSION, HIGH TOUGHNESS STEEL

Keizo Ishizaki, Kitakyoshu; Hiroshi Sekine, Tokyo; Hisashi Gondo, Hisashi; Koji Wada, Kisarazu; Tsuyoshi Kawano, Kisarazu; Hidekazu Watanabe, Kisarazo; Gou Kanbayashi, Chiba-ken, and Tadasatsu Maruyama, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 222,496, Feb. 1, 1972, abandoned. This application Oct. 11, 1973, Ser. No. 405,635
Int. Cl. C21d *7/12, 7/14*
U.S. Cl. 148—12 F **5 Claims**



1. A method for manufacturing a high tension, high toughness steel comprising hot-rolling a steel composition composed of:

0.005 – 0.15% C,
less than 0.60 % Si,
0.70 – 2.0% Mn,
0.01 – 0.15% Nb,
0 to less than 0.20% V,
0 to less than 0.08% Al,
0 to less than 1.00% Ni,
0 to less than 1.00% Cr,
0 to less than 1.00% Cu,
0 to less than 0.20% Ti, and
0 to less than 0.20% Zn,

with the remainder being iron and unavoidable impurities, and wherein said hot rolling is carried out after heating to a temperature of higher than 1,200°C, and during said hot rolling, at least one severe reduction at a rate of more than 26 percent per pass is effected in the temperature range from 1,100°C to 950°C, and wherein the total reduction below 950°C is more than 45 percent of the plate thickness at 950°C, and then finishing at a temperature below 850°C and above the Ar_3 transformation point.

3,849,210

HIGH STRENGTH HIGH CONDUCTIVITY ALUMINUM ALLOY WINDINGS IN LARGE CORE FORM TRANSFORMERS

Laurence D. Kunsman, 113 Echo Springs Cir., Trafford, Pa. 15085

Division of Ser. No. 168,770, Aug. 3, 1971, abandoned. This application Aug. 17, 1973, Ser. No. 389,415
Int. Cl. C21d *9/52;* **C22c** *21/04;* **C22f** *1/04*
U.S. Cl. 148—12.7 **1 Claim**

1. In the method of forming a coil for a core form transformer the steps comprising, solution heat treating at a temperature within the range between 800° and 950°F an age hardenable aluminum base alloy having a composition within the range between 0.35 percent to 0.8 percent magnesium, 0.3 percent to 0.7 percent silicon, 0.5 percent maximum iron and the balance aluminum in the form of wire for imparting thereto high ductility, low strength and low spring-back, winding the solution heat treated wire into predetermined coil configuration and thereafter age hardening the wire in coil configuration at a temperature within the range between 325°F and 375°F for a time period ranging between about 8 and 12 hours, to provide a yield strength level of at least 10,000 psi during short-circuit operation conditions of the transformer.

3,849,211

FLUX FOR WELDING REFRACTORY AND NON-FERROUS METALS

Samuil Mordkovich Gurevich, bulvar Lesi Ukrainki, 2, kv. 2; Vadim Nikolaevich Zamkov, bulvar Lesi Ukrainki, 2, kv. 8; Valery Pavlovich Prilutsky, ulitsa N. Botanicheskaya, 15/17, kv. 4; Vladimir Filippovich Topolsky, ulitsa Kioto, 9, kv. 89; Nikolai Vasilievich Podkopai, ulitsa Stanislavskogo, 3, kv. 4; Sergei Afanasievich Manoilo, ulitsa Demyana Bednogo, 12, kv. 33, and Nikolai Leonidovich Dykhno, ulitsa Melnikova, 48, kv. 6, all of Kiev, U.S.S.R.

Filed June 13, 1973, Ser. No. 369,763
Int. Cl. B23k *35/34;* **C22b** *9/10*
U.S. Cl. 148—26 **2 Claims**

1. A flux for melting refractory and non-ferrous metals, which contains, percent by weight:

barium fluoride - 3–7
calcium fluoride - 83–92
aluminium fluoride - 5–10

3,849,212

PRIMARY RECRYSTALLIZED TEXTURED IRON ALLOY MEMBER HAVING AN OPEN GAMMA LOOP

Donald R. Thornburg, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 228,318, Feb. 22, 1972, abandoned. This application Dec. 11, 1972, Ser. No. 312,681

Int. Cl. C04b *35/00*

U.S. Cl. 148—31.55 4 Claims

1. A heat treated alloy member having an open gamma loop and improved magnetic characteristics consisting essentially of up to 0.03% carbon, up to 1% manganese, less than 0.012% sulfur, from about 0.3% to about 4% of a volume resistivity improving element selected from the group consisting essentially of, up to 2% silicon, up to 2% chromium, and up to 3% cobalt, and the balance essentially iron with incidental impurities, the alloy having a major porportion of the grains exhibiting a (110) texture and in which a major proportion of the oriented grains have cube edges of their crystal lattices aligned within 12° of the rolling direction, and primary recrystallized and normal grain growth microstructure.

3,849,213

METHOD OF PRODUCING A MOLDED ANISOTROPIC PERMANENT MAGNET

Max Baermann, 506 Bensberg Wolfshof, Bezirk, Cologne, Germany

Continuation of Ser. No. 61,425, Aug. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 662,284, Aug. 22, 1967, abandoned. This application Dec. 7, 1972, Ser. No. 312,906

Claims priority, application Germany, Sept. 1, 1966, 1288317

Int. Cl. C21d *1/04*

U.S. Cl. 148—108 14 Claims

1. A method of making a magnetized plastic bonded permanent magnet having a selected pole arrangement, said method comprising the following steps:

a. producing a flat casting of a permanent magnet alloy having a coercive force greater than 1,200 Oersteds, said casting having a smallest dimension located between two generally flat surfaces and a preferred magnet direction perpendicular to said two flat surfaces;

b. magnetizing said casting to at least about saturation by a magnetizing field passing through said small dimension and generally perpendicular to said surfaces;

c. crushing said casting into anisotropic particles each having a preferred magnetic axis and a size which can pass through a 100 mesh screen;

d. mixing said particles with a plastic binder to form a non-magnetically aligned mixture;

e. molding said mixture in a mold under the influence of a magnetic field having an intensity in the range of 1,000–4,000 Gauss and with a configuration generally matching said selected pole arrangement.

3,849,214

COLD ROLLER LEVELING TREATMENT OF CUBE ORIENTED SILICON STEEL TO REMOVE COIL SET

Karl Foster, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1973, Ser. No. 410,133

Int. Cl. H01f *1/04*

U.S. Cl. 148—111 6 Claims

1. In the process of producing cube oriented silicon steel, wherein the steel has been high temperature box annealed and cooled in coiled form to provide the desired grain orientation which results in coil set, the method of removing the coil set comprising the steps of,

a. cold roller leveling the coiled material at ambient temperature without longitudinal tension and thereafter

b. annealing the leveled material at a temperature between 700°C and 1,300°C.

3,849,215

METHOD OF HEAT TREATING WELDED ZR—CB OBJECTS

Aart van der Linde, Alkmaar, and Eduard Maurice Hornsveld, Bergen, both of Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

Filed Mar. 23, 1972, Ser. No. 237,402

Claims priority, application Netherlands, Mar. 26, 1971, 7104075

Int. Cl. C21d *1/74, 9/50*

U.S. Cl. 148—127 2 Claims

1. A method for improving the corrosion resistance of a welded portion of an object made of zirconium base alloy containing 0.5 to 5 weight percent columbium, said method comprising thermally treating said portion by heating to an elevated temperature in the range 450° to 650° C while excluding oxygen and nitrogen and maintaining said portion at the elevated temperature for a period of time greater than 25 hours when the temperature is less than 475° C, 20 to 80 hours when the temperature is 475° C, 15 to 70 hours when the temperature is 500° C, 10 to 60 hours when the temperature is 525° C, 5 to 50 hours when the temperature is 540° C, 1 to 40 hours when the temperature is 560° C, 0.5 to 30 hours when the temperature is 575° C and for a period of time less than 20 hours when the temperature is greater than 575° C, said method being free of any operation involving deformation of said portion.

3,849,216

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND SEMICONDUCTOR DEVICE MANUFACTURED BY USING THE METHOD

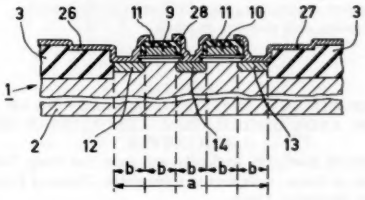
Roelof Herman Willem Salters, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 7, 1972, Ser. No. 304,392

Claims priority, application Netherlands, Nov. 20, 1971, 7116013

Int. Cl. H011 *7/44*

U.S. Cl. 148—187 12 Claims



1. A method of manufacturing a semiconductor device comprising the steps of providing on a surface of a semiconductor body a first electrically insulating layer, providing on said body so as to extend over only part of said semiconductor surface at least one electrically conductive layer separated from the semiconductor surface by said first insulating layer, converting the exposed surface of said conductive layer into a second electrically insulating layer by a chemical conversion process, said first insulating layer masking the underlying semiconductor surface against said chemical conversion process, thereafter introducing into said semiconductor surface doping material against which said conductive layer and said second insulating layer acts as a mask to form at least one surface zone in the body having conductivity properties different from those of the adjacent semiconductor material, and forming by an etching process a contact window over said surface zone, said second insulating layer forming part of the contact window etching mask and being removed at most only partly by said etching process.

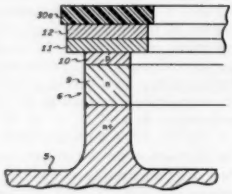
3,849,217
METHOD OF MANUFACTURING HIGH FREQUENCY DIODE

Harry Kroger, Sudbury, and Curtis N. Potter, Holliston, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 222,771, Feb. 2, 1972, Pat. No. 3,761,783. This application Mar. 9, 1973, Ser. No. 339,810

Int. Cl. C23f 1/02; H01l 7/50

U.S. Cl. 156—11 **6 Claims**



1. The method of making a high frequency diode device from a body of semiconductor material having type *n*+ conductivity and having an epitaxial layer of type *n* conductivity, the method comprising:

forming a layer of type *p* conductivity material at a surface of said epitaxial layer,

forming a metal layer of chromium over said surface,

forming a metal layer of gold over said chromium layer,

forming a ring shaped photoresist mask over said gold layer,

substantially removing by etching said metal layers except where protected by said ring shaped mask for forming contiguous metal ring layers,

undercutting said contiguous metal ring layers by etching said semiconductor body for generating a first annular mesa projecting from said body for supporting said metal ring layers,

removing by etching substantially all parts of said metal ring layers overhanging said first annular mesa, and

removing said photoresist mask.

3,849,218
COMPOSITION AND METHOD FOR STRIPPING NICKEL, ZINC AND CADMIUM FROM SUBSTRATES OF IRON AND COPPER

Merton M. Beckwith, Rockville, and Jaan-Jiue Fong, Tolland, both of Conn., assignors to Conversion Chemical Corporation, Rockville, Conn.

Filed Mar. 13, 1973, Ser. No. 340,911

Int. Cl. C09k 3/00; C23f 1/00

U.S. Cl. 156—18 **17 Claims**

1. A composition for selectively stripping nickel, cadmium and zinc coatings from a workpiece providing a substrate surface of iron, copper or alloys of iron or copper comprising, on a per liter basis at makeup, an aqueous solution of:

A. about 20 to 80 grams of a water-soluble nitrobenzoic acid compound selected from the group consisting of nitrobenzoic acid, ring-substituted nitrobenzoic acid, the ammonium and alkali metal salts thereof, and mixtures thereof;

B. about 40 to 160 grams of a water-soluble carbonate compound selected from the group consisting of carbonic acid, the ammonium and alkali metal salts thereof, and mixture thereof;

C. about 0.2 to 8.0 grams of a water soluble dithiocarbamate compound selected from the group consisting of substituted and unsubstituted thiocarbamic acids, the alkali metal and ammonium salts thereof, and mixtures thereof;

D. about 0.2 to 16.0 grams of a water-soluble thiosulfuric acid compound selected from the group consisting of thiosulfuric acid, the alkali metal and ammonium salts thereof, and mixtures thereof;

E. ammonium hydroxide in a quantity sufficient to provide a solution pH of about 8.5 to 10.7;

said composition having a weight of ammonium ion (NH_4^+) to nitrobenzoic acid radical ($NO_2C_6H_4COO^-$) of about 1.0 – 3.0:1.0, a weight ratio of thiosulfuric acid radical ($S_2O_3^=$) to dithiocarbamate radical (($(C_2H_5)_2NSCS^-$)) of about 0.2 – 8.0:1.0 and a weight ratio of dithiocarbamate and thiosulfuric acid radicals combined to nitrobenzoic acid radical of about 0.01 – 0.70:1.0.

3,849,219
MANUFACTURE OF OPTICAL APPARATUS

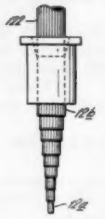
John Alan Hall-Jackson, Acomb, England, assignor to The Rank Organisation Limited, London, England

Filed June 21, 1973, Ser. No. 371,957

Claims priority, application Great Britain, June 21, 1972, 29081/72

Int. Cl. B32b 17/04, 31/16

U.S. Cl. 156—73.6 **7 Claims**



1. A method of producing a fibre optic spray comprising the steps of:

forming a bundle which comprises a large number of optical fibres of substantially equal length each extending from end to end of the bundle;

locating one end of the bundle in a holding ferrule;

inserting the holding ferrule into the open end portion of a hollow forming ferrule also having a portion of internal diameter reducing from a maximum dimension adjacent the end portion receiving the bundle to a minimum dimension at the other end;

supporting the ferrule assembly with the holding ferrule above the forming ferrule;

shaking the assembly to cause the inner fibres of the bundle to fall to a staggered extent into the lower reducing-diameter portion of the forming ferrule;

bonding the fallen fibres in position to the holding ferrule, the forming ferrule being withdrawn; and

cutting off the staggered fibre lengths exposed by withdrawal of the forming ferrule.

3,849,220
METHOD FOR MAKING CORDLESS TIRES

Yasuo Suzuki; Iwao Arimura, and Tatsuo Arai, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 21, 1971, Ser. No. 210,509

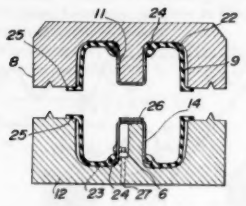
Claims priority, application Japan, Dec. 24, 1970, 45-117206; July 10, 1971, 46-40545

Int. Cl. B29h 17/00

U.S. Cl. 156—110 R **9 Claims**

1. A method for making a cordless tire having a hollow cylindrical metal hub with a longitudinal center line coincid-

ing with the axis of rotation of the tire and a pair of outwardly extending annular flanges integrally formed with said hub at the longitudinally opposite ends thereof, and a shaped rubber shell extending from one of the pair of annular flanges to the other, the cylindrical hub having at its bottom a disk flange located between the pair of annular flanges and extending at right angles to the axis of rotation of the tire, said method comprising the steps of forming two halves of the rubber shell of the tire body as a as a whole by means of a mold assembly composed of two half molds separable in the axial direction of internal cavities thereof and an annular core to be inserted into said cavities, each of said half shells extending from one

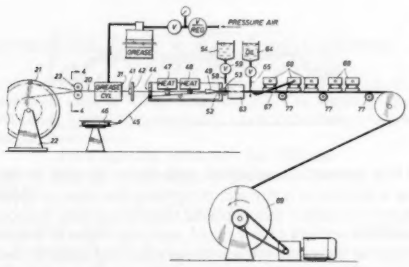


of said annular flanges to the peripheral center line of the tire, and having along the peripheral center line annular lugs made integral with the side edges of the half bodies opposite to the hub members and bonded to form an annular ridge, bonding the flange side edge of each half shell to the corresponding annular flange of the corresponding hub by snugly fitting a cylindrical stud made integral with each of the two half molds in the corresponding hub, bonding the annular lugs along the peripheral center line of the two half shells to each other to form an annular ridge and form a tire case having a rubber shell integral with the hub, and vulcanizing the tire case thus formed in the mold by pressurizing the inside space of the tire defined by the rubber shell and the cylindrical hub.

3,849,221
METHOD FOR MANUFACTURING A SHEATHED CABLE FOR USE IN POST-TENSIONING CONCRETE STRUCTURES

Thomas E. Middleton, Houston, Tex., assignor to Pre-Stress Concrete, Inc., Houston, Tex.

Division of Ser. No. 860,737, Sept. 24, 1969, Pat. No. 3,654,027. This application Mar. 13, 1972, Ser. No. 233,946
Int. Cl. B29c *17/00*; **E04c** *3/10*, *5/08*
U.S. Cl. 156—145 **3 Claims**



1. A method of manufacturing a sheathed cable for use as post-tensioned reinforcing member in concrete structures comprising the steps of:

continuously advancing an elongated plastic strip having feathered edges;

heating the plastic strip to soften at least the edges of said strip;

continuously advancing a multistranded cable into adjoining relationship with said advancing plastic strip;

applying grease to completely impregnate said advancing cable;

removing excess grease from said cable to provide a uniformly impregnated cable;

loosely forming said heated strip around said impregnated cable so that the heat softened edges of said strip are in overlapping relationship;

applying a solvent uniformly to the heated contiguous surfaces of the overlapping edges of said plastic strip;

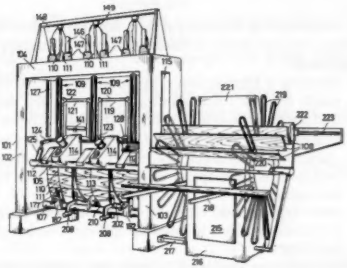
pressing said overlapping edges together to effect an initial bond therebetween to form a sheath; and

applying additional force to the overlapping portion of said plastic strip to ensure an effective bond of said plastic sheath.

3,849,222
METHOD FOR TRANSVERSELY ASSEMBLING SHEET STRIPS SUCH AS VENEERS, STRIPS OF CARDBOARD OR THE LIKE

Gerhard Ortel, Rietberg/Westfalen, Germany, assignor to Heinrich Kuper, Rietberg/Westfalen, Germany

Continuation-in-part of Ser. No. 800,157, Feb. 18, 1969, Pat. No. 3,686,057. This application May 3, 1972, Ser. No. 249,937
Claims priority, application Germany, Feb. 21, 1968, 1628989; Austria, Aug. 20, 1968, 8104/68
Int. Cl. B32b *31/12*, *31/18*
U.S. Cl. 156—148 **7 Claims**



1. A method of transversely assembling strips, such as veneers, to form larger sheets by means of a plurality of connecting threads adhered at right angles to the longitudinal extension of assembled strips, and comprising the step of:

a. laterally introducing a first edgewise strip between thread guiding devices arranged adjacent one another, said strip being conveyed in a guide and disposed with its lower edge on a first abutment arranged displaceably, said abutment being secured for a holding operation above a downwardly extending path for the strip;

b. retarding said first strip before it comes into contact by its front edge, viewed in the direction of travel, with a second abutment;

c. displacing said first abutment so as to permit said first strip to move downwardly;

d. after reaching its lateral end position, causing downward movement against the upper side edge of the preceding strip already connected to the sheet;

e. during the descending movement of said first strip, effecting the following steps in a continuous fashion:

1. applying adhesive-coated threads to opposite surfaces of said first strip;
2. cementing said threads to said first strip by heat; and
3. weaving said threads above the upper longitudinal edge of said first strip so that the strip is secured in a wicker-work-like fashion; and

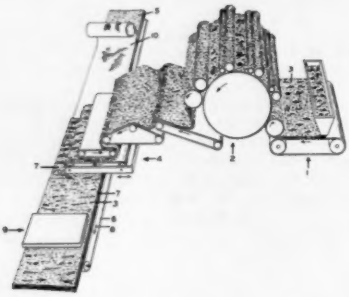
f. returning said first abutment to a position in which it is ready to repeat step (a).

3,849,223

METHOD OF MAKING A NON-WOVEN NEEDLED FABRIC HAVING A RANDOM LINEAR STREAKED DESIGN

Raymond C. Kent, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Feb. 26, 1973, Ser. No. 335,923
Int. Cl. B32b *23/02*
U.S. Cl. 156—148 **6 Claims**



1. A method of manufacturing a non-woven needled fabric having a random linear streaked design of a plurality of colors comprising:

a. forming a fibrous layer by opening and blending dyed staple organic fiber bundles to a controlled degree such that each of the bundles retains its distinct coloration, the individual bundles being of one of a plurality of colors;
b. garnetting said layer into a web whereby the fibers are oriented but at a speed whereby further fiber blending is minimized;
c. cross-lapping said web onto a backing web positioned on a stationary apron to build up sufficient layers to hide the backing;
d. transporting said backing web and plurality of surfacing layers to a needling station and needling the web and overlying layers to form an integral, unitary, needled fabric in which the commingled fibers form colorful streaks having a random linear pattern of the plurality of colors of the staple fiber bundles.

3,849,224

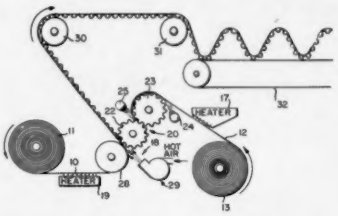
WATER RESISTANT CORRUGATED PAPERBOARD

Harold L. Hintz, and Joseph T. Webb, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed July 21, 1972, Ser. No. 273,835
Int. Cl. B31f *1/22*
U.S. Cl. 156—208 **10 Claims**

1. In the process of manufacturing water resistant corrugated paperboard, consisting of at least one linerboard component having both sides thereof coated with a film of thermoplastic material, and at least one corrugating medium component having both sides thereof coated with a film of thermoplastic material, the steps of:

a. pretreating the said corrugating medium component with an interval size treatment to selected from the group consisting of 0.75–1.0% rosin with about 1.5% alum, 0.2% stearic anhydride with 0.3–0.4% alum, or 0.2% succinic anhydride with 0.3–0.4% alum inhibit the water wicking tendencies thereof;
b. applying a direct pre-heat treatment to one side of the said coated and sized corrugating medium prior to entering the corrugating nip of a corrugating machine;
c. applying an indirect pre-heat treatment to the opposite side of the said coated and sized corrugating medium by heating at least one of the corrugating rolls of the corrugating machine;
d. applying a lubricating treatment in the form of a water spray or a water spray containing detergent to the corrugating nip of the corrugating machine;



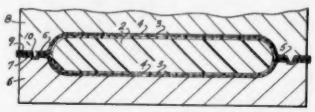
e. applying a direct pre-heat treatment to one side of the said coated linerboard component prior to entering the bonding nip of a corrugating machine;
f. applying an indirect pre-heat treatment to the opposite side of the said coated linerboard component by heating the pressure roll of the corrugating machine;
g. applying an additional direct heating treatment at the bonding nip of the corrugating machine to render the thermoplastic film surface on one of the components tacky and bondable;
h. pressing the tacky and bondable surface of one of the components into contact with the other of said components at the bonding nip; and,
i. cooling the laminate thus formed to allow the bond to set.

3,849,225

METHOD OF FORMING AN APPLICATOR CONSTRUCTION

Richard J. Haertle, Brookfield, Wis., assignor to Kleen Test Products, Inc., Milwaukee, Wis.

Filed Jan. 10, 1973, Ser. No. 322,407
Int. Cl. B29c *3/00*; **B32b** *31/18*, *1/04*, *27/40*
U.S. Cl. 156—213 **3 Claims**



1. A method of forming an applicator to be used for applying a product to a surface, comprising the steps of applying layers of a fusible thermoplastic resin to opposite surfaces of a cellular resilient core material, applying a layer of absorbent fabric to the outer surface of each layer of resin to form a composite structure, providing a die including a pair of die members, said die members having cooperating generally flat peripheral pressure surfaces and having cooperating cutting elements located intermediate the inner and outer extremities of said pressure surfaces, applying pressure through said pres-

sure surfaces to the peripheral edge portion of the composite structure while maintaining the cutting elements out of cooperating cutting relationship, heating said peripheral edge portion to a temperature sufficiently high to fuse the core material and fuse the resin layers and impregnate the fused material into the fabric to provide an integrally bonded peripheral edge portion, and moving the cutting elements into cooperating cutting relationship to trim said bonded peripheral edge portion and provide an applicator having an outwardly projecting fused peripheral edge.

3,849,226

PRODUCING FIBER REINFORCED RESIN PANELS WITH GELCOAT FIBER LAYER AND LACQUER PROTECTIVE

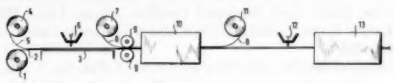
Josef Butz, Weiden, Germany, assignor to Flachglas Ag Delog-Detag, Fuerth/Bayern, Germany

Filed Aug. 14, 1972, Ser. No. 280,188

Claims priority, application Germany, Aug. 26, 1971, 2142731

Int. Cl. C09j *3/14*

U.S. Cl. 156—247 **6 Claims**



1. A method of producing fiber-reinforced resin panels comprising the steps of:

extending a bottom cover film layer;

depositing onto said bottom cover layer a layer of fibers;

impregnating said fiber layer with a liquid thixotropic polymerizable resin mix to which the cover film layers and the fibers are inert;

covering said impregnated fiber layer with a top cover layer, each cover layer being cleanly separable from the resin-impregnated fiber layer at any stage of resin polymerization;

gelling, at least partially, the resin of the impregnated, bilaterally covered fiber layer;

separating from the gelled layer at least one of the two cover layers so as to expose the former;

applying to the exposed gelled resin-impregnated fiber layer a protective layer of a curable coating substance which is free of fibers; and

curing the superposed resin-impregnated fiber layer and the protective layer, thereby creating a molecular bond between the layers.

3,849,227

METHOD FOR SCORE SEALING A FOAM PLASTIC CONTAINER

Teunis Frieling, Pijnacker, and Teunis Ten Bruggencate, Zoetermeer, both of Netherlands, assignors to Stichting Ontwikkeling Verpakkingsmethoden In De Zuivelindustrie, The Hague, Netherlands

Filed Apr. 20, 1972, Ser. No. 245,855

Claims priority, application Netherlands, May 13, 1971, 7106615

Int. Cl. B32b *31/00*

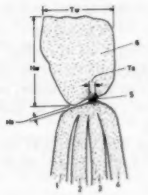
U.S. Cl. 156—268 **6 Claims**

1. A method for the application of a sealing weld to a container of foam plastic sheet with a density of less than 250 kg/m³, comprising:

A. overlapping the parts of the foam plastic to be welded,

B. seal welding said overlapped parts together by means of pressure that compresses the welded parts to between about 10 percent and 20 percent of their original thickness at a temperature approximately 20°C above the softening point of the plastic for a time of less than about 10 seconds without the foamy character of the weld being lost, and

C. simultaneously welding a score weld adjacent and along said seal weld and that is tearable, and is formed by compressing said parts to a thickness less than 2 percent of the



original thickness of said overlapped parts at a pressure that is considerably higher than 200 kg/cm² so that said score weld is almost completely surrounded or bridged and protected by the refoaming of the adjacent parts of the sealing weld and the container that have remained ductile, thereby preventing unintentioned collapse of the score weld by loading.

3,849,228

METHOD AND APPARATUS TO CONSTRUCT WALL PANELS

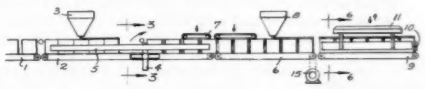
Hans Lingl, Neu-Ulm, Germany, assignor to Lingl Corporation, Paris, Tenn.

Filed Oct. 23, 1973, Ser. No. 409,005

Claims priority, application Germany, Nov. 3, 1972, 2253816

Int. Cl. B32b *31/00*; **E04d** *15/00*

U.S. Cl. 156—297 **16 Claims**



1. A process for the production of wall panels by perpendicular superposition of rows of blocks, each block having a predetermined intended vertical and horizontal face wherein said process comprises the steps of:

a. placing said blocks onto a conveying means with the intended vertical faces of said blocks oriented horizontally and the intended horizontal faces of said blocks oriented vertically;

b. aligning said blocks into a continuous row with said intended horizontal faces of said blocks abutting one another;

c. applying mortar to the surfaces of said horizontally oriented intended vertical faces of said blocks;

d. turning each of said blocks by 90° to place the intended vertical face of each of said turned blocks adjacent to the intended vertical face of the preceding block, so that each

of said blocks now has its intended horizontal face oriented horizontally;

e. bringing the intended vertical faces of said blocks together to form a predetermined vertical joint thickness;

f. applying mortar to said intended horizontal faces of said blocks;

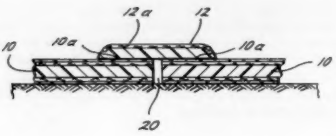
g. lifting a predetermined number of said blocks and placing them onto a horizontal support thereby forming a row in a wall panel of such blocks having both vertical and horizontal mortared joints.

3,849,229

METHOD OF JOINING AND SEALING ASPHALT PLANKS FOR A RESERVOIR OR THE LIKE

Leo J. Spillane; Stephen H. Alexander, and Reba H. Bramble, all of Houston, Tex., assignors to Gulf States Asphalt Co. Inc., Houston, Tex.

Filed June 22, 1973, Ser. No. 372,779
Int. Cl. C09j *3/30*; **E02b** *5/00*
U.S. Cl. 156—304 **6 Claims**



1. A method of joining asphaltic planks to form a substantially permanently watertight reservoir or the like, comprising the steps of:

positioning a plurality of asphaltic planks of relatively stiff material on a base, with the edges of the planks in substantially butting non-overlapping relationship to thereby form a plurality of longitudinal and lateral spaces between said edges;

placing a primer on the upper surfaces of the planks adjacent the longitudinal and lateral spaces between the edges of the planks; and

applying sealing strips of substantially permanently non-hardening, yieldable solvent-free bituminous material, each of said strips having a strip of woven fiberglass on its upper surface, on said primed upper surfaces and extending across each of said longitudinal and lateral spaces to form a sealed watertight joint between each of the adjacent planks which does not crack and which yields to accommodate shifting or other relative movements of the planks while maintaining the sealed joint.

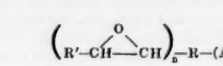
3,849,230

PROCESS OF BONDING USING EPOXY-AZIDO ADHESIVES

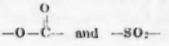
David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 85,300, Oct. 29, 1970, abandoned, which is a division of Ser. No. 843,230, July 18, 1969, Pat. No. 3,608,604. This application Nov. 30, 1972, Ser. No. 310,739
Int. Cl. C09j *5/00*; **B32b** *27/38, 25/02*
U.S. Cl. 156—330 **6 Claims**

1. A process of adhering a polymer to a substrate selected from the group consisting of siliceous material, metal and other polymer substrates which comprises the steps of (1) modifying said polymer by heating in admixture with a small amount of an epoxy-azido compound having the formula



where R is a polyvalent organic radical, R′ is a radical selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl, and aralkyl radicals, A is a radical selected from the group consisting of



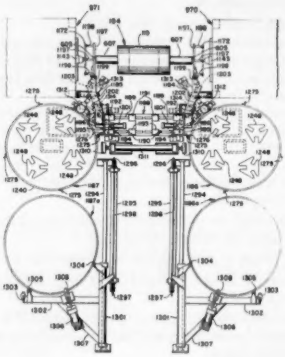
and *n* and *m* are integers from 1 to 100 and, (2) coupling said polymer to said substrate through the epoxy groups on the modified polymer.

3,849,231

BEAD MECHANISM

Wilhelm Brey, Cuyahoga Falls, Ohio; William Hostetler, Santa Ana, Calif.; Earl Ferdnand Loeffler, Akron, Ohio; Hubert Ernest Kolm, Louisville, Ohio, and Fred Grove Elder, Atwater, Ohio

Division of Ser. No. 10,579, Feb. 11, 1970, Pat. No. 3,700,526. This application Sept. 15, 1971, Ser. No. 180,835
Int. Cl. B29h *17/22*
U.S. Cl. 156—403 **13 Claims**



1. A mechanism for automatically feeding beads, as they are needed, to a machine used in a tire making process for setting beads in position on green tires, said mechanism comprising:

a. a pair of arms positioned adjacent the machine in predetermined spaced relation to the overall length of a drum with tire making material wrapped thereon;

b. means for mounting the arms for rotating in planes angularly disposed to the longitudinal axis of a drum positioned in the machine for receiving beads;

c. a source of beads disposed adjacent each arm;

d. a plurality of arcuately spaced fingers carried by each arm for transporting beads from the source to the machine for receipt thereby, the fingers being movable into and out of engagement with the beads;

e. means for rotating the arms and fingers into position for grabbing beads from the source;

f. means for moving the fingers into grabbing engagement

with a pair of beads from said source;

g. means for rotating the arms and fingers with engaged beads, towards the machine for delivery of the beads; and

h. means for moving the fingers out of engagement with the delivered beads when the machine accepts them;

i. a shoulder on each finger for engaging beads; and

j. means carried by the fingers for deflecting beads against the shoulders;

the source of beads including:

k. at least one stack of beads adjacent each arm;

l. means for holding the beads in spaced relation in the stacks; and

m. means for moving the beads towards one end of the stacks for removal therefrom by the fingers.

3,849,232
FALLING FILM EVAPORATOR

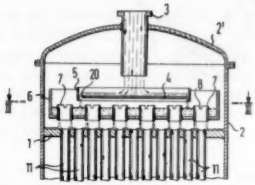
Gustav Kessler, Malsch; Erich Frank, Karlsruhe, and Volker Laumann, Ettlingen, all of Germany, assignors to Wiegand Karlsruhe GmbH, Ettlingen, Germany

Filed Mar. 13, 1973, Ser. No. 340,662

Claims priority, application Germany, Mar. 16, 1972, 2212816

Int. Cl. B01d *1/22, 1/00*

U.S. Cl. 159—13 A **10 Claims**



1. A falling film evaporator comprising, in combination:

a. a shell having an axis upright in the normal operating position of said evaporator;

b. a transverse tube sheet forming the floor of a feed chamber in said shell,

1. said tube sheet being formed with a plurality of spaced openings therethrough;

c. a plurality of heating tubes received in said openings and axially extending from said sheet away from said feed chamber, said heating tubes having respective orifices axially open toward said feed chamber;

d. a receptacle in said feed chamber;

e. a plurality of distributor tubes axially extending from said receptacle toward said tube sheet and communicating with said receptacle,

1. respective annular terminal lower faces of said distributor tubes bounding orifices of said distributor tubes spacedly directed toward said tube sheet,

2. the number of said distributor tubes being substantially smaller than the number of said heating tubes,

3. the cross section of said orifice of each distributing tube being substantially greater than the cross-section of said orifice of each heating tube,

4. at least a portion of each of said faces being aligned in the direction of said axis with a portion of said tube sheet free from said openings; and

f. feed means for feeding the liquid to be evaporated to said receptacle.

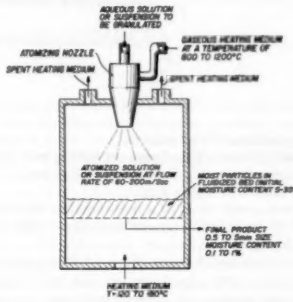
3,849,233
METHOD OF PRODUCTION OF GRANULATED PRODUCT

Mikhail Vasilievich Lykov, Simonovsky val, 22, korpus 2, kv. 53; Gleb Fedorovich Rybalchenko, ulitsa Grishina, 18, kv. 73; Mikhail Alexeevich Korotkov, Selo Semenovskoe, 139, all of Moscow; Evgeny Ivanovich Dobrovolsky, Sotsgorod, Podolskaya ulitsa, 25; Inna Lukinichna Rudenko, Sotsgorod, Shkolny proezd, 4, kv. 4, both of Dneprodzerzhinsk; Oleg Vladimirovich Avilov, ulitsa Tsitadelnaya, 5/9, kv. 65, Kiev; Nikolai Panteleevich Kuz, ulitsa Bolotnikovskaya, 46, korp. 3, kv. 69, Moscow; Nikolai Ivanovich Dubinin, ulitsa Krasnoarmeiskaya, 129, kv. 52, Kiev; Lev Pavlovich Glozman, Sotsgorod, ulitsa Volgodonskaya, 1, kv. 1; Alexandr Dmitrievich Lizunkov, Sotsgorod, ulitsa Ukhtomskogo, 35, kv. 4, both of Dneprodzerzhinsk; Viktor Ivanovich Voishvilo, ulitsa Patrisa Lumumby, 60, kv. 57, Cherkassy; Khanna Isaakovna Sverdlova, Sotsgorod, Shkolny proezd, 1, kv. 3, Dneprodzerzhinsk, all of U.S.S.R.; Yakov Benedictovich Bljumberg, deceased, late of Donskaya ulitsa, 42, kv. 4, Moscow, U.S.S.R., and by Anna Benedictovna Bljumberg, executrix, Leningrad, U.S.S.R.

Continuation of Ser. No. 47,156, June 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 637,679, May 11, 1967, abandoned. This application Mar. 2, 1972, Ser. No. 231,424

Int. Cl. B01d *1/16;* **F26b** *3/12*

U.S. Cl. 159—48 R **4 Claims**


AQUEOUS SOLUTION OR SUSPENSION TO BE GRANULATED
ATOMIZING NOZZLE
GASEOUS HEATING MEDIUM AT A TEMPERATURE OF 600 TO 1200°C
SPENT HEATING MEDIUM
SPENT HEATING MEDIUM
ATOMIZED SOLUTION OR SUSPENSION AT FLOW RATE OF 60–300m³/hr
MOIST PARTICLES IN A FLUIDIZED BED (INITIAL MOISTURE CONTENT 5–30%)
FINAL PRODUCT 0.5 TO 5mm SIZE, MOISTURE CONTENT 0.1 TO 1%
HEATING MEDIUM T=120 TO 180°C

1. A method of producing a granulated product from liquid solutions or suspensions, said method comprising atomizing the solution or suspension in a downwardly directed stream of a first gaseous heating medium to effect preliminary drying of the thus atomized solution or suspension until the moisture content of the particles formed will be within the range of 5 to 35 percent; gravitationally supplying the thus preliminarily dried particles to a fluidized bed which is fluidized by a second gaseous heating medium flowing counter currently to the atomized stream, and finally drying the formed particles in the fluidized bed by the said second gaseous heating medium flowing upwardly thru said bed to form granules with a preset moisture content, the temperature of said first gaseous heating medium and the ratio of its rate of flow to that of said liquid solution or suspension being selected for controlling the size of the obtained granules within the range of 0.5 to 5.0 mm, with a yield of 90–95 percent of the fraction of the desired size, said first heating medium being supplied at a temperature of 600°C to 1200°C, and the second said gaseous heating medium being supplied at a temperature below the melting point or decomposition temperature of the final desired product.

3,849,234

SHEET MATERIAL ORNAMENT WITH UNFOLDABLE UPSTANDING FINGERS

Aloysius H. Pottkotter, 20915 Westland, Southfield, Mich. 48075

Filed Oct. 15, 1973, Ser. No. 406,674
Int. Cl. A63g *31/00*
U.S. Cl. 161—17 **10 Claims**

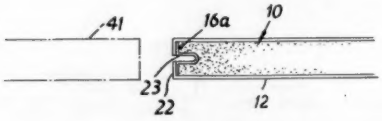
1. An unfoldable-fingered ornament comprising
a rearward support of relatively stiff sheet material,
inner and outer superimposed ornamental members of flexible sheet material having central portions and elongated fingers radiating outward from said central portions and foldably flat,
and means for securing said central portions to said rearward support.

3,849,235

CEMENTITIOUS BUILDING BOARD WITH EDGE REINFORCING STRIPS

Thomas Gwynne, Loughborough, England, assignor to BPB Industries Limited, London, England

Filed July 10, 1972, Ser. No. 270,394
Claims priority, application Great Britain, July 12, 1971, 32635/71; May 22, 1972, 23991/72
Int. Cl. B32b *1/04, 3/04, 31/18*
U.S. Cl. 161—44 **3 Claims**



1. A gypsum panel comprising
a generally planar core of gypsum having two opposite face surfaces terminating in edges, at least one of said edges being provided with a kerf,
at least one cover sheet of a non-metallic material disposed adjacent to at least one of said face surfaces and said kerfed edge,
and a reinforcing element disposed along and in contact with said kerfed edge between said cover sheet and the core, said reinforcing element including two side flanges and a kerf-reinforcing portion joined to and located between said side flanges, said reinforcing portion being characterized by a contour which conforms substantially to that of said kerf, said cover sheet terminating in an edge which overlies and is secured to one of said reinforcing side flanges.

3,849,236

FLOCK-TEXTURING METHOD AND PRODUCT

Richard P. Bourdon, Claremont, N.H., assignor to Pervel Industries, Inc., Plainfield, Conn.

Filed June 11, 1973, Ser. No. 368,493
Int. Cl. D03d *27/00*
U.S. Cl. 161—64 **24 Claims**

1. The method of treating a flock-finished fabric wherein the flock consists of synthetic fibers of uniform denier and length bonded at corresponding ends to at least one side of a fabric base and uniformly distributed over the base and oriented normal to the base, the flock density being less than maximum and at least such that the average fiber-to-fiber spacing is substantially less than projecting flock-fiber length, which method comprises soaking the flock-finished fabric with a dilute aqueous solution of a heat-curable adhesive to which the flock is compatible, randomly folding the soaked fabric, wringing from the folded fabric a substantial fraction of the fabric-adhered solution, spreading the wrung-out fabric, drying the spread and wrung-out fabric, and then heating the

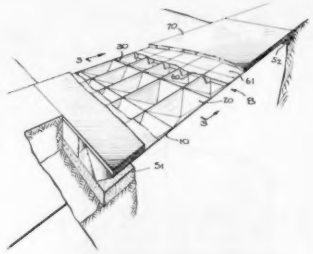
dried fabric to a temperature and for a period sufficient to cure the adhesive.

3,849,237

STRUCTURAL MEMBER OF SHEET MATERIAL

Lev Zetlin, 89 Hamilton Dr., Roslyn, N.Y. 11576

Filed Apr. 8, 1971, Ser. No. 132,390
Int. Cl. B32b *3/12;* **E01d** *19/12*
U.S. Cl. 161—68 **18 Claims**



1. A structural member comprising:
longitudinal web means of sheet material including a pair of integrally connected, elongated first sheet sections relatively inclined to one another and defining between themselves an elongated channel;
a plurality of hollow shell elements of sheet material arranged in side-by-side adjacency in and longitudinally distributed along said elongated channel, each of said hollow shell elements having a first pair of opposite side walls each of which comprising a second sheet section generally parallel to and in substantially full face-to-face contact with the respective one of said first sheet sections and each of said hollow shell elements having a second pair of opposed side walls intermediate of and generally transverse to said first pair of side walls; and
means integrally connecting said hollow shell elements with said longitudinal web means at said respective first and second sheet sections thereof substantially along the full face-to-face contact region therebetween so as to form said shell elements and said web means into a composite integral structure.

3,849,238

ARTIFICIAL SKIN

Francis E. Gould, 29 Cedar Ln., and Samuel H. Ronel, 84 Deerpath, both of Princeton, N.J. 08540

Filed Apr. 7, 1972, Ser. No. 242,162
Int. Cl. C09j *7/02;* **B32b** *3/26*
U.S. Cl. 161—159 **16 Claims**

1. An artificial skin consisting essentially of (1) a relatively thick water-containing hydrophilic polymer hydrogel sponge layer and (2) on one side of said sponge layer a relatively thin

film layer of non hydrophilic moisture vapor permeable, oxygen and carbon dioxide permeable polymer, said layers (1) and (2) combined have a moisture vapor transmission of 200–5,000 grams/sq. meter/24 hours/40° C./80 percent relative humidity/mil. and said hydrophilic polymer being a polymer of a member of the group consisting of hydroxy lower alkyl acrylates, hydroxy lower alkyl methacrylates, hydroxy lower alkoxy lower alkylacrylates, hydroxy lower alkoxy lower alkyl methacrylates, vinyl pyrrolidone, acrylamide, lower alkyl methacrylamide, N-hydroxy lower alkyl acrylamide, N-hydroxy lower alkyl methacrylamide and polyvinyl alcohol.

3,849,239

PRESSURE-SENSITIVE TRANSFER ELEMENTS

Wilfred Harry Newman, Holland-on-Sea, England, assignor to Ozalid Company Limited, Loughton, Essex, England

Filed June 15, 1973, Ser. No. 370,527
Claims priority, application Great Britain, June 23, 1972, 29539/72; Sept. 29, 1972, 45135/72
Int. Cl. B32b *3/26, 5/18, 27/30*
U.S. Cl. 161—160 **7 Claims**

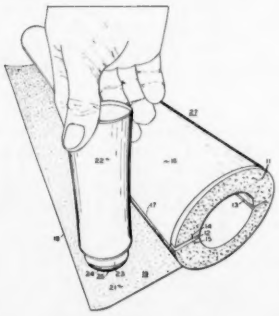
1. A pressure-sensitive transfer element consisting of a backing film of pretreated polypropylene, a layer of a cured polyurethane composition containing from 15 to 35 percent by weight based on the solids content of a compatible polymer consisting of a vinyl polymer or a cellulose ester, an intermediate layer of polyvinylidene chloride or of uncured polyurethane resin on said layer and a layer of microporous polymer sponge on said intermediate layer.

3,849,240

SELF SEAL SYSTEM FOR THE INSTALLATION OF INSULATION

John Paul Mikulak, Minneapolis, Minn., assignor to Johns-Manville Corporation, New York, N.Y.

Filed Jan. 19, 1970, Ser. No. 3,638
Int. Cl. B32b *27/42;* **C09j** *7/00*
U.S. Cl. 161—167 **1 Claim**



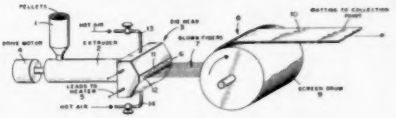
1. A thermal insulating element comprising a body of fibrous thermal insulation mat having a major face; a flap of flexible sheet material overlying a portion of a major face of said body and extending from a margin of said body; an adhesive of the phenolic neoprene type on said sheet material securing said sheet material to said body; and a dormant layer of said adhesive secured to an extending face of said flap, said dormant layer of said adhesive being capable of adhesive activation by an organic activating solvent whereby said flap can be adhered to an adjacent surface which it overlays.

3,849,241

NON-WOVEN MATS BY MELT BLOWING

Robert R. Butin; James P. Keller, and John W. Harding, all of Baytown, Tex., assignors to Exxon Research and Engineering Company

Continuation-in-part of Ser. Nos. 865,105, Oct. 9, 1969, Pat. No. 3,755,527, and Ser. No. 103,050, Dec. 31, 1970, abandoned, and Ser. No. 103,094, Dec. 31, 1970, abandoned, said Ser. No. 103,050, and Ser. No. 103,094, each is a continuation-in-part of Ser. No. 786,122, Dec. 23, 1968, abandoned. This application Feb. 22, 1972, Ser. No. 227,769
Int. Cl. F06b *9/30*
U.S. Cl. 161—169 **37 Claims**



1. In a process for producing a melt-blown non-woven mat wherein a fiber-forming thermoplastic polymer resin is extruded in molten form from orifices of a heated nozzle into a stream of hot inert gas which attenuates said molten resin into fibers that form a fiber stream, and said fibers are collected on a receiver in the path of said fiber stream to form said non-woven mat,

the improvement which comprises:

subjecting a fiber-forming thermoplastic polymer resin having an initial intrinsic viscosity of at least 1.4 to degradation in the presence of a free radical source compound prior to extrusion from said nozzle orifices until said resin has both a reduced intrinsic viscosity of from about 0.6 to less than 1.4 and an apparent viscosity in said nozzle orifices of from about 50 to about 300 poise.

3,849,242

ANTISTATIC FIBER BLEND

Kenji Takeya, and Kunio Tanahashi, both of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Oct. 13, 1972, Ser. No. 297,283
Claims priority, application Japan, Oct. 18, 1971, 46-82330
Int. Cl. D02g *3/00, 3/02*
U.S. Cl. 161—176 **5 Claims**

1. A blend of substantially all acrylic synthetic fibers having improved antistatic properties and improved physical properties consisting essentially of 25 to 85 percent by weight of nonshrinkable fibers and 75 to 15 percent by weight of shrinkable fibers having a difference in shrinkage of 7 to 40 percent from said nonshrinkable fibers, and containing 20 to 60 percent of antistatic fibers based on the weight of all the fibers in the blend which antistatic fibers constitute all or a part of the nonshrinkable fibers, said antistatic fibers being side-by-side type conjugated fibers in which antistatic properties are imparted only to the low shrinkage component side.

3,849,243

LAMINATES OF SUPPORT MATERIAL AND FLUORINATED POLYMER CONTAINING PENDANT SIDE CHAINS CONTAINING SULFONYL GROUPS

Walther Gustav Grot, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 196,772, Nov. 8, 1971, Pat. No. 3,770,567. This application Aug. 1, 1973, Ser. No. 384,497

Int. Cl. B32b *27/06*, *27/04*

U.S. Cl. 161—189 5 Claims

1. A laminate comprising a first layer of fluorinated polymer containing pendant side chains containing sulfonyl groups which are attached to carbon atoms which have at least one fluorine atom attached thereto wherein a majority of the sulfonyl groups are in the $-(SO_2NH)_mQ$ form, Q being selected from the group consisting of H, cation of an alkali metal, cation of an alkaline earth metal and combinations thereof, and *m* being the valence of Q; and a second layer of fluorinated polymer containing pendant side chains containing sulfonyl groups wherein the sulfonyl groups are in the $-SO_2M$ form wherein M is a halogen atom, said second layer being integral with said first layer and containing support material completely encapsulated therein.

3,849,244

HEAT-REFLECTING LAMINATED SAFETY GLASS PANE

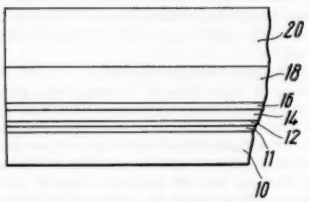
Rolf Groth, Witten, Germany, assignor to Flachglas Aktiengesellschaft DELOG-DETAG, Furth, Bayern, Germany

Filed Feb. 29, 1972, Ser. No. 230,370

Claims priority, application Germany, Mar. 3, 1971, 2109995

Int. Cl. B32b *17/10*; B60j *3/00*

U.S. Cl. 161—199 4 Claims



1. A heat reflective, safety glass laminate exhibiting improved splinter adhesion adapted for use in motor vehicles and aircraft comprising, in face-to-face, sequential bonded engagement with one another

A. a first layer comprising a glass pane,

B. a second layer ranging from about 30 to 100A in thickness of a vacuum vapor deposited material selected from the group consisting of thorium fluoride, sodium fluoride, cryolite, magnesium fluoride, lanthanum fluoride, and cerium fluoride each having a vaporization temperature above about 1000°C,

C. a third layer which is substantially transparent consisting essentially of high refractive index zinc sulfide,

D. a fourth layer which is substantially transparent consisting essentially of gold,

E. a fifth layer which is substantially transparent consisting essentially of high refractive index zinc sulfide,

F. a sixth layer consisting essentially of an adhesive organic polymeric transparent film, and

G. a seventh layer comprising a glass pane.

3,849,245

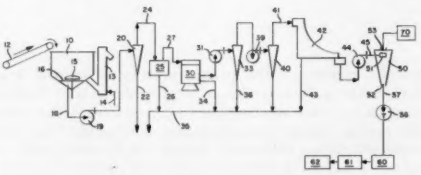
SEPARATION OF GREASY LIQUIDS AND RECOVERY OF PAPER FIBER FROM MUNICIPAL REFUSE

Paul G. Marsh, and David E. Chupka, both of Middletown, Ohio, assignors to Black Clawson Fibreclaim, Inc., Middletown, Ohio

Continuation-in-part of Ser. No. 224,815, Feb. 9, 1972, abandoned. This application Nov. 13, 1973, Ser. No. 415,301

Int. Cl. D21f *1/66*; B01d *21/26*

U.S. Cl. 162—4 15 Claims



1. The process of recovering by-products, including paper fibers for reuse from refuse containing waste paper contaminated by garbage, comprising the steps of:

a. forming from said refuse a pumpable aqueous slurry wherein the solid constituents are of a maximum particle size of the order of paper fibers and consist essentially of paper fibers contaminated with greasy liquids,

b. supplying said slurry to a conical vessel having a tangentially arranged inlet port adjacent the base thereof and having outlet ports in the apex and base thereof, said inlet and base ports being of the same order of flow area,

c. maintaining the supply flow to said inlet port sufficiently high to develop in said vessel centrifugal force conditions causing vortical separation of said slurry within said vessel into an outer fraction containing the large majority of the paper fibers and an inner fraction containing the large majority of said greasy liquids and to cause discharge flows of said outer and inner fractions through said apex and base ports respectively,

d. maintaining said discharge flows through both of said outlet ports in predetermined relation such that the portion of said outer fraction discharged through said apex port as accepted stock contains the large majority of the paper fibers which enter said vessel,

e. recovering for reuse the reject materials in such discharge flow through said base outlet, and

f. further treating said recovered reject materials to convert the same into one or more of the following by-products:

i. the grease constituents thereof,

ii. fuel including said grease constituents,

iii. fuel substantially free of said grease constituents.

3,849,246

RECOVERY OF PAPER FIBER FROM WASTE MATERIAL CONTAMINATED WITH GREASE, WAX AND/OR SIMILAR MATERIAL

Delmar R. Raymond, Suffern, and Jack M. Kleinfeld, Bronx, both of N.Y., assignors to Black Clawson Fibreclaim, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 294,324, Oct. 2, 1972, abandoned. This application June 13, 1974, Ser. No. 478,792

Int. Cl. D21b *1/08*

U.S. Cl. 162—4 9 Claims

1. In the recovery of paper fiber for reuse from waste paper material, the process of separating the reusable paper fibers from light organic contaminants of specific gravities similar to or lower than paper fibers, comprising the steps of:

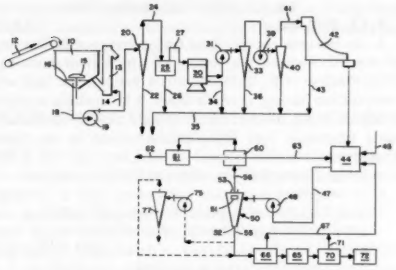
a. forming from said waste material a pumpable aqueous slurry wherein the solid constituents are of a maximum

particle size of the order of paper fibers and consist essentially of paper fibers and one or more of such light organic contaminants, namely, grease, wax and plastic fragments and fibers similar in size and specific gravity to paper fibers,

b. heating said slurry to an elevated temperature of at least 120°F sufficient to soften whatever grease and wax is present therein,

c. supplying said heated slurry to a closed cylindrical-conical vessel having a tangentially arranged inlet port adjacent the base thereof and having outlet ports in the apex and base thereof, said inlet and base ports being of substantially the same order of flow area,

d. maintaining the supply flow to said inlet port sufficiently high to develop in said vessel centrifugal force conditions causing vortical separation of said slurry within said vessel into an outer fraction containing the large majority of the paper fibers and an inner fraction containing the large majority of said light contaminant materials, and to cause discharge flows of said outer and inner fractions through said apex and base ports respectively,



e. maintaining said discharge flows through both of said outlet ports in predetermined relation such that the portion of said outer fraction discharged through said apex port as accepted stock contains the large majority of the paper fibers which enter said vessel, and

f. recovering said paper fibers in said accepted stock for resuse.

3,849,247

SCREENING AND FEEDING DEVICE FOR CELLULOSE DIGESTERS

Johan C.F.C. Richter, St. Jean Cap Ferrat, France, assignor to Kamyr Aktiebolag, Karlstad, Sweden

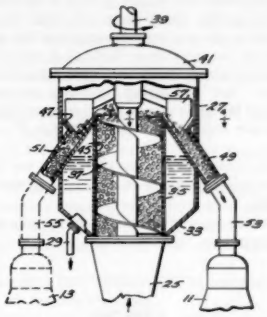
Filed Mar. 12, 1973, Ser. No. 339,758

Claims priority, application Sweden, Mar. 21, 1972, 72/3600

Int. Cl. D21c *7/06*

U.S. Cl. 162—237 **6 Claims**

1. A cellulose digesting apparatus in which a top portion of at least one vertical digester is in open communication with a pressure-resistant vessel containing a screening device wherein liquid is strained from a chips-liquid suspension for recirculation of the liquid, and a feeding device for transferring the chips from said vessel to the digester, said feeding device comprising a plurality of chips outlets in the vessel each for connection to a separate digester and a distributing device for the distribution of the chips upon the outlets used, said screening device comprising a separating shell having an upper impervious portion and a lower strainer portion including means for collecting liquid separated from the chips; means for feeding the strainer chips upwardly through the shell for discharge over the top edge of the upper impervious portion, said means including a feeder screw surrounded by said shell and coaxial therewith; collecting means around said shell and below the top edge of said impervious portion for collecting strained chips discharged therefrom, said collecting means



comprising a circular trough; the chips outlets comprising tubes connected to and sloping downwardly from the bottom of said trough for discharge into said digestors substantially by gravity.

ERRATUM

For Class 176—36 see:
Patent No. 3,849,257

3,849,248

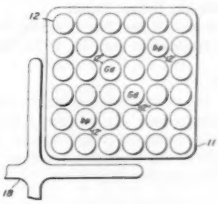
SAMARIUM COMPENSATION FOR NUCLEAR REACTOR FUEL

Frederick R. Channon, and David L. Fischer, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 799,467, Feb. 14, 1969, abandoned. This application Oct. 27, 1971, Ser. No. 193,221

Int. Cl. G21c *3/04, 7/02, 7/24*

U.S. Cl. 176—68 **9 Claims**



1. A fuel assembly for use with other fuel assemblies in a thermal nuclear reactor core, said core including control rods which are selectively movable into and out of said core to control reactivity thereof, said fuel assembly comprising an array of a plurality of spaced fuel elements containing new nuclear fuel initially lacking an equilibrium amount of samarium, said new fuel providing an excess of reactivity to compensate for said equilibrium amount of samarium which said new fuel will contain after a period of operation in said core, and an initial amount of dilute fixed gadolinium burnable poison in said fuel assembly to absorb neutrons during the period of samarium build-up in said new fuel to equilibrium to compensate for said initial lack of samarium and the said initial excess of reactivity whereby said burnable poison sub-

stantially depletes out of said fuel as the samarium builds up to the equilibrium amount, said dilute gadolinium poison having a density and distribution in the fuel assembly such that the poison will not be substantially self-shielding, said gadolinium being particularly useful in said fuel assembly as compared to other burnable poison in that it has both a neutron capture cross section which decreases more rapidly than 1/v and than the cross section of samarium-149 over thermal neutron energy range of from 0.005–0.1 electron volts, and also provides either an increased "cold" shutdown margin or an increased "hot" operating reactivity margin the initial amount of said burnable poison being substantially defined by: burnable poison atoms/fuel atoms = $Y\ \sigma^f_f/\sigma_c^{bp}$

where

Y is the fractional yield of Sm-149 atoms per fission of fuel,

σ_f is the microscopic neutron fission cross section of the fuel, and

σ_c^{bp} is the microscopic neutron capture cross section of the burnable poison.

3,849,249

PRODUCTION OF SYNTHETIC POLYNUCLEOTIDES

Kyuji Rokugawa; Yoshiki Katoh; Akira Kuninaka, and Hiroshi Yoshino, all of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Choshi-shi, Chiba-ken, Japan

Filed June 29, 1973, Ser. No. 374,888

Claims priority, application Japan, July 21, 1972, 47-72471

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 N **8 Claims**

1. A process for producing a polynucleotide which comprises steps of: cultivating a microorganism belonging to the genus *Achromobacter* and contacting at least one nucleoside diphosphate with a cultured material selected from the culture of said microorganism, the cells isolated from the culture, and polynucleotide phosphorylasse containing material derived from the cells, in the presence of at least one divalent cation selected from manganese and magnesium ions.

3,849,250

PROCESS FOR PRODUCING L-ARGININE BY FERMENTATION

Kiyoshi Nakayama, Sagamihara, and Hajime Yoshida, Tokyo, both of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 119,348, Feb. 26, 1971, abandoned. This application Jan. 16, 1973, Ser. No. 324,033

Int. Cl. C12d *13/06*

U.S. Cl. 195—29 **4 Claims**

1. A process for producing L-arginine which comprises culturing *Corynebacterium glutamicum* ATCC 21659 in a nutrient medium containing a carbon source, nitrogen source and inorganic salts to accumulate L-arginine, and recovering the accumulated L-arginine therefrom.

3,849,251

PROCESS FOR PRODUCING L-TRYPTOPHAN

Kiyoshi Nakayama, Sagamihara, and Hiroshi Hagino, Tokyo, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed May 23, 1973, Ser. No. 363,039

Claims priority, application Japan, Nov. 11, 1972, 47-114236

Int. Cl. C12d *13/06*

U.S. Cl. 195—29 **4 Claims**

1. A process for producing L-tryptophan by fermentation which comprises culturing a mutant strain of *Corynebacterium glutamicum* which requires phenylalanine and tyrosine for growtn and which is resistant to at least one analogue of tryptophan and at least one of the group consisting of phenylalanine analogues and tyrosine analogues, in an aqueous nutrient medium containing sources of carbon, nitrogen, inorganic nutrients and required growth factors; accumulating L-tryptophan in the resulting culture liquor and recovering said L-tryptophan therefrom.

3,849,252

ENZYME COMPOSITION AND PROCESS FOR THE MANUFACTURE THEREOF

Edmund E. Percs, Basel; Kurt F. Stocker, Basel-Land, both of Switzerland; Birger Blomback; Margareta Blomback, both of Stockholm, Sweden, and Birgit Hessel, Bandhagen, Sweden, assignors to Pentaphram A.G., Basle, Switzerland

Filed Jan. 14, 1972, Ser. No. 217,994

Claims priority, application Switzerland, Jan. 18, 1971, 733/71

Int. Cl. C07g *7/02;* **A61k** *19/00*

U.S. Cl. 195—62 **13 Claims**

1. An enzyme composition from venom of Bothrops atrox of any other snake the venom of which is immunologically cross-reactive with Bothrops atrox venom, the said enzyme composition having, at lower doses, a hemostatic activity and, at higher doses, a blood anticoagulant activity in humans and other mammals, and being characterized by the following properties:

a. it has a thrombin-like endopeptidase activity,

b. it comprises a peptide component and a carbohydrate component, the peptide component including one or more polypeptides having a molecular weight between about 18,000 and 55,000 as determined by the equilibrium ultracentrifugation method,

c. it has a carbohydrate (neutral sugar) content of about 2 to 10 percent by weight, based on the protein content,

d. it is scarcely soluble in distilled water but readily soluble in physiological sodium chloride solution,

e. it forms complexes with phenol and phenol derivatives, which complexes are scarcely soluble or insoluble in water,

f. it causes coagulation of fibrinogen by selective elimination of fibrinopeptides A from fibrin without releasing fibrinopeptides B,

g. it has a thrombin-like activity corresponding to about 30 to 450 NIH-thrombin units per mg. of protein content,

h. it splits tosylarginine methyl ester and gelatin but not lysin methyl ester, phenylalanine ethyl ester, N-acetylmethionine, N-acetyltyrosine, leucylglycine and casein,

i. it is not inhibited by heparin, heparinoids, hirudin, antithrombins and the polyvalent peptidase inhibitor of KUNITZ,

k. it is inhibited at an enzyme concentration of about 5 mg. per ml. to the extent of about 95 percent with respect to its coagulation and esterase activity by 2.5×10^{-3} molar diisopropyl fluorophosphate at a pH of 8 within 2 hours,

l. it is competitively inhibited by tosylarginine methyl ester and completely inhibited by the antibody contained in antibothrops serum,

m. it is not fixed and, therefore, not inactivated by fibrin,

n. it has a substantially longer biological halflife time than heparin,

o. it causes the formation of a fibrin derivative which interacts with excess fibrinogen to form a nonpolymerizable fibrin-fibrinogen complex,

p. it acts on fibrinogen with formation of a fibrin which has physico-chemical properties different from those of fibrin produced by thrombin insofar as it is rapidly hydrolyzed by fibrinolytic enzymes even in the presence of activated factor XIII and of calcium ions and is soluble in 5-molar aqueous urea, and

q. it causes in vivo a defibrinogenation and a secondary fibrinolysis without hemorrhagic and thromboembolic side effects.

3,849,253
PROCESS OF IMMOBILIZING ENZYMES

Richard D. Harvey, Marion, and Kurt Ladenburg, Cedar Rapids, both of Iowa, assignors to Penick & Ford, Limited, Cedar Rapids, Iowa

Filed Oct. 10, 1972, Ser. No. 296,330
Int. Cl. C07g *7/02*
U.S. Cl. 195—68 **9 Claims**

1. The process of immobilizing a water-soluble enzyme on a carrier, wherein an aqueous solution of an enzyme is contacted with a water-insoluble carrier material for fixation of said enzyme thereon, and said carrier material while said surfaces are wetted with said enzyme solution is contacted with an aqueous solution of film-forming resin, said resin being in the process of polymerization to a water-insoluble state at a temperature and pH at which said enzyme is stable, wherein the improvement comprises employing nylon in the form of a spongy floc as said carrier material, and depositing on the exposed enzyme solution coated surfaces of said nylon floc carrier material a water-insoluble film of said resin containing said enzyme in active form.

3,849,254
PROCESS FOR EFFECTING ENZYMATIC REACTIONS IN AEROSOLS

Donald J. Kirwan, and John L. Gainer, both of Charlottesville, Va., assignors to The University of Virginia, Charlottesville, Va.

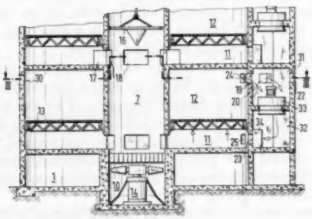
Filed May 31, 1973, Ser. No. 365,637
Int. Cl. C12b *1/00*; **C07g** *7/02*
U.S. Cl. 195—116 **9 Claims**

1. A method for inactivating airborne virus or airborne bacterium which comprises contacting an aerosol containing said virus or bacterium with an immobilized hydrolytic enzyme wherein the particle size of said aerosol is from 0.002 to 5 microns, wherein said immobilized enzyme is attached to a solid support forming an enzyme reactor and wherein said inactivation is effected by passing said aerosol through said reactor.

3,849,255
DEVICE FOR GERMINATING AND DRYING MALT

Gisbert Schlimme, Braunschweig, and Manfred Tschirner, Wolfenbuttel, both of Germany, assignors to Miag Muhlenbau und Industrie GmbH, Braunschweig, Germany

Filed Apr. 19, 1972, Ser. No. 245,514
Claims priority, application Germany, May 3, 1971, 2121586
Int. Cl. C12c *1/14, 1/06*
U.S. Cl. 195—129 **5 Claims**

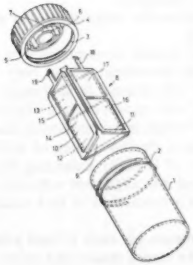


1. In a malt drying and germinating apparatus, a basic chamber having a generally cylindrical wall,
a central vertical stack spaced radially inwardly of said cylindrical wall,
vertically spaced horizontal walls extending from said cylindrical wall to said stack, and dividing said basic chamber into a plurality of individual superimposed working chambers,
a malt drying and germinating rack in each working chamber between said horizontal walls and dividing each working chamber into an air inlet chamber beneath said rack and an air outlet chamber above said rack,
air inlet ducts leading into each inlet chamber beneath the associated rack thereof,
door means in each air inlet duct varying the volume of air supplied through said inlet ducts,
an air outlet duct leading from each air outlet chamber adjacent the top thereof,
door means for varying the flow of air through said outlet ducts,
an air circulating blower at the bottom of said central stack, an air heating chamber at the bottom of said basic chamber and having heating means therein,
an air inlet duct leading from said heating chamber to said blower,
another air inlet duct admitting air at ambient temperature to said air heating chamber,
air circulating means disposed outside of said working chambers and having communication with said air outlet ducts leading from said air outlet chambers for withdrawing spent air therefrom,
conveyor means in each working chamber above the associated rack for conveying malt thereonto,
malt turnover means adjacent said conveyor means for turning over the malt on each rack,
individual drive means on the outside of said working chambers adjacent each conveyor means for turning over the malt on the associated rack during heating and germinating thereof,
said racks being mounted for turning movement about said working chambers and turning thereabout during drying and germinating of the malt and being individually driven and accommodating the circulation of air therethrough.

3,849,256
SUBSTRATE-CONTAINING TEST CONTAINER

Fritz Linder, 440 60 Skarhamn, Sweden

Filed Oct. 13, 1972, Ser. No. 297,230
Claims priority, application Sweden, Jan. 31, 1972, 1081/72
Int. Cl. C12k *1/10*
U.S. Cl. 195—139 **14 Claims**



1. A fluid testing device comprising a casing, having a removable screw lid, and a hollow testing colum disposed within the caseing, said testing column having a number of test fields spaced apart from each other said test fields being located along respective parts of the surface of the column, facing the casing, an annular groove formed in the lower face of said lid and suspension means projecting from the upper part of said

testing column into said annular groove for detachably holding said testing column.

3,849,257

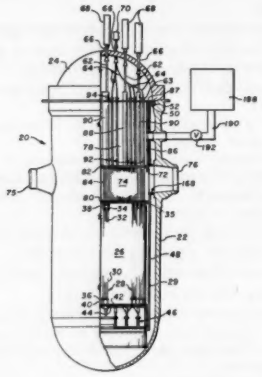
GUIDE STRUCTURE FOR CONTROL ELEMENTS

Frank Bevilacqua, Windsor, Conn., assignor to Combustion Engineering Inc., Windsor, Conn.

Filed June 28, 1972, Ser. No. 266,858

Int. Cl. G21c *7/08*

U.S. Cl. 176—36 R **13 Claims**



1. A nuclear reactor comprising, in combination:

a vessel having a nuclear core fixedly positioned therein;

a plurality of fuel assemblies comprising said nuclear core, each of said fuel assemblies having a plurality of longitudinally extending fuel elements and a plurality of longitudinally extending guide channels;

an upper plate and lower plate in said vessel, said lower plate overlying all of said plurality of fuel assemblies and said upper plate being spaced above said lower plate;

a plurality of hollow tubes extending between and rigidly connected to said upper plate and said lower plate, the wall of each of said hollow tubes being circumferentially continuous substantially over the length thereof, and each of said hollow tubes being in alignment with only one of said guide channels;

a support means for supporting said two spaced plates in said vessel;

a plurality of control elements each of which is situated for telescoping movement within only one of said hollow tubes and said channel in alignment therewith;

a plurality of yoke means each of which is wholly within said vessel and which interconnects at least two of said plurality of control elements, each of said yoke means having a plurality of laterally extending fingers each of which overlies and is in alignment with one of said hollow tubes and which is connected to said control element situated therein;

connection means for each of said yoke means connected to said yoke means inside said vessel and passing outside of said vessel, each of said interconnected connection means, yoke means and control elements forming a rigid and essentially nonflexible unitary structure; and

drive means positioned outside of said vessel for each of said connection means, each of said drive means being connected to one of said connection means for driving said control elements connected thereto between a fully inserted position and a fully retracted position to control the reactivity of said nuclear core during normal operation, the position of each of said yoke means for both of said control element positions being vertically above both of said upper and lower plates.

3,849,258

RECUPERATIVE COKE OVEN

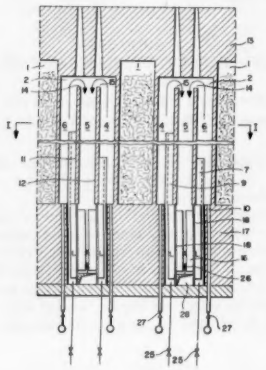
Claus Flockenhaus, Essen-Haarzopf; Wolfgang Simonis, Gladbeck; Kurt-Gunther Beck, Essen-Bredeney, and Heinrich Echterhoff, Essen, all of Germany, assignors to Didier-Kellogg Industrieanlagenbau GmbH, Essen and Bergwerksverband GmbH, Essen-Kray, both of, Germany

Filed Dec. 29, 1972, Ser. No. 319,471

Claims priority, application Germany, Dec. 28, 1971, 2164994

Int. Cl. C10b *5/20, 1/06*

U.S. Cl. 202—140 **5 Claims**



1. A recuperative coke oven comprising:

a plurality of oven chambers;

heating walls located on opposite sides of each of said oven chambers, each of said heating walls separating adjacent of said oven chambers;

each of said heating walls having therein a plurality of flue groups, said flue groups being aligned in a row extending in the longitudinal direction of the respective heating wall;

each of said flue groups comprising first, second and third separate flues arranged side-by-side across the width of the respective heating wall and in a direction transverse to said longitudinal direction thereof;

said first and second flues of each of said flue groups being ascending flues and being located adjacent the neighboring of said oven chambers separated by the said respective heating wall, and said third flue being a descending flue positioned between said first and second flues;

each of said flue groups having positioned therebelow a recuperator having cells in communication with said flues of said flue group;

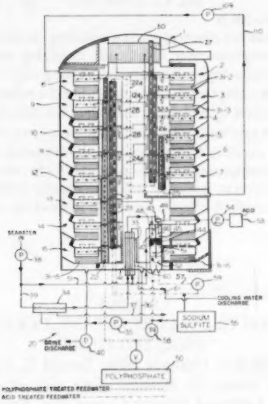
separate means connected to each of said cells of each said recuperator for supplying to said recuperator and to the respective said first and second flues a low calorie gas and/or air and for withdrawing from said recuperator and from the respective said third flue a combustion gas; and

separate flow control means operably connected to each of said cells for independently controlling the flow through each of said separate means for supplying and withdrawing.

3,849,259
DISTILLATION APPARATUS

Armando B. Steinbruchel, San Diego, Calif., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Continuation of Ser. No. 186,178, Oct. 4, 1971, abandoned.
This application Sept. 27, 1973, Ser. No. 401,183
Int. Cl. B01d 1/26, 3/02
U.S. Cl. 202—174 37 Claims



1. An evaporator including a plurality of successive effects, each effect operating at a lower temperature than preceding effects,

each effect including heat exchange tube means for placing a feed liquid and vapor in a heat exchange relation so that at least a portion of said feed liquid is vaporized and at least a portion of said vapor is condensed,

vapor distribution means for feeding at least a part of the vaporized portion of the feed liquid generated in each effect except the lowest temperature effect, as the vapor to the heat exchange tube means of the next lower temperature effect,

the heat exchange tube means of the initial one of said successive effects being oriented with its individual heat exchange tubes disposed substantially vertically and the heat exchange tube means of the remaining effects being oriented with their individual heat exchange tube means disposed substantially horizontally,

feed liquid distribution means for feeding an initial quantity of feed liquid to the interiors of the heat exchange tubes of the initial effect and for feeding the unevaporated portion of said feed liquid from each effect as a film over the outer surfaces of said horizontally disposed heat exchange tubes of the next succeeding effect, said vapor distribution means conducting said vapor to the interiors of said horizontally disposed tubes of the next lower temperature effect, said feed liquid means also including means for providing an additional quantity of feed liquid to each of said horizontally disposed heat exchange tubes in an amount substantially sufficient to maintain a thin film on the outer surfaces thereof.

3,849,260
WATER DISTILLATION APPARATUS

Raymond Charles Ruckstuhl, Delray Beach, Fla., assignor to Oral Corporation, Boca Raton, Fla.

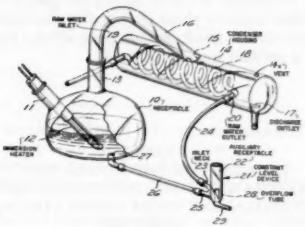
Filed June 14, 1973, Ser. No. 369,905
Int. Cl. B01d 3/42
U.S. Cl. 202—181 6 Claims

1. In a water distillation apparatus having

a receptacle providing a boiling chamber, heating means for boiling the water in said receptacle;

a condenser connected to receive water vapor from said boiling chamber;

and a constant level device including an auxiliary receptacle having a fluid connection to the bottom of said boiling chamber and having a water inlet above said connection, a downwardly extending overflow tube having its upper end open inside said auxiliary receptacle to define the static water level inside said boiling chamber, and means providing a discharge opening from the bottom of said overflow tube;



the improvement wherein said fluid connection provides a valve-less passageway between the bottom of said boiling chamber and said auxiliary receptacle;

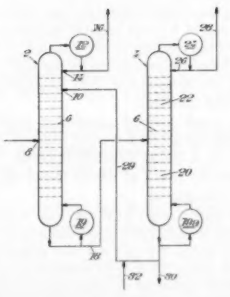
and further comprising

means defining a drain opening in said overflow tube of the constant level device which is lower than the bottom of said boiling chamber and communicates directly and uninterruptedly with the bottom of the boiling chamber through said fluid connection to drain the boiling chamber each time the boiling stops and the flow of water into the boiling chamber is discontinued.

3,849,261
METHOD FOR SEPARATING HYDROCARBONS ESPECIALLY AROMATIC HYDROCARBONS AND INSTALLATIONS THEREFOR

Georges Gau, Nancy, France, assignor to Agence Nationale de Valorisation de la Recherche (Anvar), Courbevoie, France

Filed Feb. 25, 1972, Ser. No. 229,273
Claims priority, application France, Feb. 26, 1971, 71.06659
Int. Cl. B01d 3/34; C07c 7/04, 15/08
U.S. Cl. 203—39 43 Claims



1. Method of enriching one of the constituents of an initial mixture containing at least two hydrocarbons, and of which at

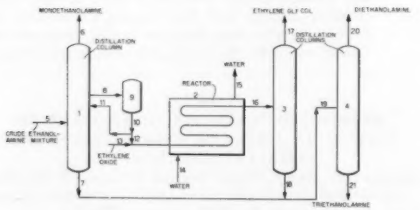
least one possesses a replaceable hydrogen atom more readily replaceable by a metal of an organometallic compound than a hydrogen atom of the other hydrocarbon, comprising fractionally distilling said mixture in contact with such an organometallic compound having a metal atom which preferentially replaces a replaceable hydrogen atom on one of said hydrocarbons, said metal atom being substituted in a chemically reversible manner for said replaceable hydrogen atoms, effecting replacement of at least one hydrogen atom of said hydrocarbon whose hydrogen atom is more readily replaced by said metal atom with said metal atom, and collecting vapor phase distillate enriched in the hydrocarbon of the initial mixture which has the least affinity for said metal and an unvaporized bottoms phase enriched in the hydrocarbon of the initial mixture which has the most affinity for said metal atom in a partially metallated form.

3,849,262

PROCESS FOR THE SEPARATION OF MONOETHANOLAMINE, DIETHANOLAMINE, AND TRIETHANOLAMINE FROM CRUDE ETHANOLAMINE MIXTURES

Gioacchino Cocuzza, Catania, Italy, assignor to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed July 18, 1973, Ser. No. 380,526
Claims priority, application Italy, Sept. 20, 1972, 29422/72
Int. Cl. B01d *3/34*; **C07c** *91/02*
U.S. Cl. 203—38 **5 Claims**



1. A process for the separation of monoethanolamine, diethanolamine and triethanolamine from crude ethanolamine mixtures containing ethylene glycol obtained by the reaction of aqueous ammonia with ethylene oxide, comprising the steps of:

a. introducing the crude ethanolamine mixture into a distillation column at a point situated between the top of the column and the bottom of the column;
b. removing monoethanolamine at the top of the column;
c. removing diethanolamine and triethanolamine at the bottom of the column;
d. removing a side stream containing monoethanolamine and ethylene glycol in a weight ratio of 1:1 to 20:1, respectively, at a point situated between the top of the column and the point at which the crude ethanolamine mixture is introduced;
e. mixing the side stream with ethylene oxide in a quantity such that the weight ratio of ethylene oxide to monoethanolamine is about 1:1 to 1.4:1 and reacting the resulting mixture for about 20 to 120 minutes at temperatures of at most 50°C to yield a reaction product comprising diethanolamine, triethanolamine and ethylene glycol; and
f. separating the ethylene glycol in the reaction product from the diethanolamine and triethanolamine in the reaction product.

3,849,263

PROCESS FOR ELECTROLYTICALLY COLOURING OF ALUMINIUM WHICH HAS PREVIOUSLY BEEN ANODICALLY OXIDIZED

Ove Christopher Gedde, Gaupefaret 24, 1713 Gralum, Sarpsborg, Norway

Filed June 25, 1970, Ser. No. 49,951
Claims priority, application Norway, June 25, 1969, 2638/69
Int. Cl. C23b *9/02*
U.S. Cl. 204—35 N **5 Claims**

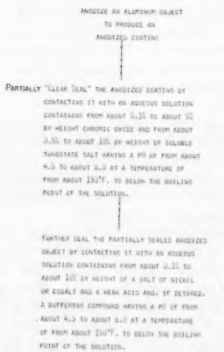
1. A process for electrolytically coloring an aluminum article which comprises first, anodically oxidizing said article to form an alumina layer thereon; immersing said article in an aqueous bath comprising a strong acid and a solution of about 0.5 to 20 percent by weight of a divalent tin salt, based on said bath, said tin salt being the predominant source of metal ions in said bath capable of forming and determining the color of the colored compounds in said alumina layer, and passing an alternating current between said anodically oxidized article and a counter-electrode via said bath to develop said color on said article.

3,849,264

PRODUCTION OF STAIN RESISTANT, CLEAR, SEALED ANODIZED FILMS

Kenneth E. Weber, Granada Hills; Donald G. Crozier, Burbank, and Wilbur W. Hawley, Santa Ana, all of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif., by said Weber and Crozier

Filed Sept. 5, 1972, Ser. No. 286,595
Int. Cl. C23c *7/00*
U.S. Cl. 204—35 N **15 Claims**


ANODIZE AN ALUMINUM OBJECT TO PRODUCE AN ANODIZED COATING
PARTIALLY "CLEAR SEAL" THE ANODIZED COATING BY CONTACTING IT WITH AN AQUEOUS SOLUTION CONTAINING FROM ABOUT 0.1% TO ABOUT 5% BY WEIGHT CHROMIC OXIDE AND FROM ABOUT 0.5% TO ABOUT 10% BY WEIGHT OF SOLUBLE TUNGSTATE SALT HAVING A PH OF FROM ABOUT 4.5 TO ABOUT 6.0 AT A TEMPERATURE OF FROM ABOUT 130°F. TO BELOW THE BOILING POINT OF THE SOLUTION.
FURTHER SEAL THE PARTIALLY SEALED ANODIZED OBJECT BY CONTACTING IT WITH AN AQUEOUS SOLUTION CONTAINING FROM ABOUT 0.1% TO ABOUT 10% BY WEIGHT OF A SALT OF NICKEL OR COBALT AND A WEAK ACID AND, IF DESIRED, A BUFFERING COMPOUND HAVING A PH OF FROM ABOUT 4.5 TO ABOUT 6.0 AT A TEMPERATURE OF FROM ABOUT 130°F. TO BELOW THE BOILING POINT OF THE SOLUTION.

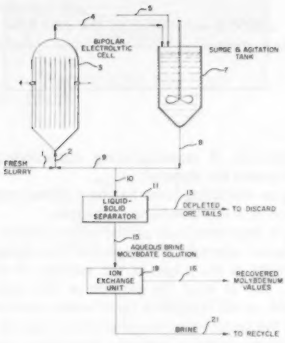
1. In a process of sealing an anodized aluminum coating in which said coating is contacted with a first solution containing tungstate and chromate ions so as to partially seal said anodized coating, the improvement which comprises:

contacting the anodized coating which has been contacted with said first solution after it has been removed from said first solution with a further solution containing from about 0.1% to about 10% by weight of a soluble salt of a metal selected from the group consisting of nickel and cobalt and of a weak acid at a temperature of from about 150°F. to immediately below the boiling point of said solution for a period sufficient to further seal said anodized coating in order to render said anodized coating substantially stain resistant.

3,849,265
ELECTRO-OXIDATIVE METHOD FOR THE RECOVERY OF MOLYBDENUM FROM SULFIDE ORES

Bernard J. Scheiner; Roald E. Lindstrom, both of Reno, Nev., and Thomas A. Henrie, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 1, 1971, Ser. No. 185,502
Int. Cl. C01b *15/00*
U.S. Cl. 204—86 **5 Claims**



1. The method for the dissolution of molybdenum and rhenium, which comprises:

forming a pumpable slurry, said slurry being a mixture of a pulverized solid and a carrier liquid, said solid being a sulfide-type source of molybdenum, or rhenium or of molybdenum and rhenium; and said carrier liquid being an aqueous salt solution;

contacting said slurry with an anode and cathode;

providing current through said anode and cathode, while maintaining the slurry at a pH of 5 to 9 and temperature of 15° to 55°C, and thereby electrolyzing said slurry to electro-oxidize said molybdenum and rhenium; and

separating the resulting slurry into two fractions the first of which is an aqueous solution containing dissolved molybdenum, rhenium or a mixture of dissolved molybdenum and rhenium, and the second of which is the depleted electrolyzed solid.

3,849,266
PROCESS FOR THE ELECTROLYSIS OF ALKALI CHLORIDE SOLUTION

Bruno Corradi, Corso Italia; Vincenzo Petrillo, Cirie, and Giordano Cimarosti, Roverbella, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 130,472, April 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 796,190, Feb. 3, 1969, abandoned. This application Aug. 2, 1973, Ser. No. 385,042
Claims priority, application Italy, Feb. 6, 1968, 12416/68
Int. Cl. C01d *1/06, 1/08*
U.S. Cl. 204—98 **12 Claims**

1. In a process for the electrolysis of alkaline chloride solutions in mercury cathode cells and diaphragm cells, the improvement comprising reducing the anodic overvoltage in both kinds of cells and the decomposition of the amalgam in mercury cathode cells during the electrolysis by adding to the electrolyte from 2 to 200 ppm of at least one compound selected from the group consisting of,

i. the ethers of alcohols with polyoxyethylenes

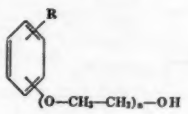
which

a. are derived from alcohols selected between aliphatic and aromatic ones and having from 8 to 20 carbon atoms, and

b. contain from 2 to 150 molecules of ethylene oxide for each molecule of alcohol,

ii. the ethers of phenols with polyoxyethylenes

having the following formula:



wherein

a. R is a radical selected between alkyl and aralkyl and has from 1 to 20 carbon atoms, and

b. *n* is between 2 and 40, inclusive,

iii. the esters of carboxylic acids with polyoxyethylenes

which

a. are derived from acids selected between aliphatic and aromatic ones and having from 6 to 20 carbon atoms, and

b. contain from 200 to 6000 ethylene oxide molecules for each molecule of acid.

3,849,267
PROCESS FOR RECOVERING MERCURY FROM A GAS CONTAINING MERCURY VAPOR

Hendrika Hilgen, Almelo, and Casper J. N. Rekers, Hengelo, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Mar. 5, 1973, Ser. No. 338,193
Claims priority, application Netherlands, Mar. 6, 1972, 7202959
Int. Cl. C01g *13/04;* C01d *1/08*
U.S. Cl. 204—99 **7 Claims**

1. A process for recovering mercury from a mercury-containing gas comprising

mixing the gas with chlorine and

subsequently passing the mixture at a temperature up to 80°C through a gas-permeable bed of non-porous solid material presenting a total external surface area amounting to at least 20 m^2 per m^3 bed volume which collects the mercury as a mercury chloride.

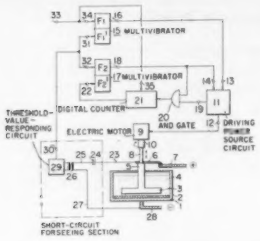
3,849,268
METHOD AND SYSTEM FOR PREVENTING SHORT-CIRCUITS IN MERCURY CATHODE ELECTROLYTIC CELLS

Nobuyuki Miyamaoto; Kyosuke Nakamura, both of Kawasaki, and Osamu Nittani, Tokyo, all of Japan, assignors to Fuji Denka Seizo Kabushiki Kaisha, Kawasaki-shi, Kanagawa-ken and Asahi Denka Kogyo Kabushiki Kaisha, Tokyo-to, both of, Japan

Filed Sept. 19, 1972, Ser. No. 290,411
Claims priority, application Japan, Sept. 5, 1972, 47-88897
Int. Cl. C01d *1/14;* B01k *3/00*
U.S. Cl. 204—99 **2 Claims**

1. A method of adjusting the distance between the anode and the cathode of a mercury cathode electrolytic cell, which method comprises the steps of: lowering the anode toward the cathode at a predetermined speed while observing the rate of voltage change with respect to the voltage between the anode and the cathode; producing an informational signal at a position of the anode with respect to the cathode when the rate of voltage change exceeds a predetermined threshold value; stopping and raising said anode at a speed substantially higher than said predetermined speed immediately after receiving the

informational signal; and then stopping said anode at a position remote upwardly by a predetermined distance from said position of the anode with respect to the cathode, where said informational signal is produced.



3,849,269

PROCESSING ORES CONTAINING NICKEL AND COPPER OXIDES

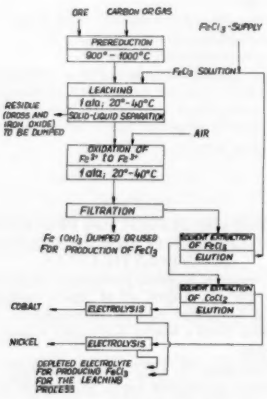
Jurgen Hartwig, Essen-Steele; Ulrich Scheffler, and Klaus-Herbert Ulrich, both of Essen, all of Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Sept. 18, 1973, Ser. No. 398,405

Claims priority, application Germany, Sept. 21, 1972, 2246413

Int. Cl. C22d *1/16, 1/14;* **C22b** *3/00*

U.S. Cl. 204—107 **8 Claims**



1. A process for isolating valuable substance selected from the group consisting of nickel, copper and cobalt from oxidic ore containing such values and which comprises reducing the ore so that these values, but not any iron contained in the ore, are reduced to their free metal state, leaching the valuable substance from thus-reduced ore at normal pressure and at a temperature below **100**°C with aqueous ferric chloride and oxidizing resulting eluate to precipitate ferric hydroxide therefrom.

3,849,270

PROCESS OF MANUFACTURING SEMICONDUCTOR DEVICES

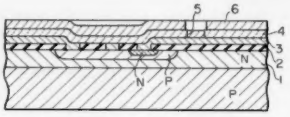
Mikio Takagi, Tokyo; Kazufumi Nakayama; Chiaki Terada, both of Kawasaki, and Hajime Kamioka, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki-shi, Japan

Filed Oct. 10, 1972, Ser. No. 295,795

Claims priority, application Japan, Oct. 11, 1971, 46-80047

Int. Cl. C23b *1/00, 3/02;* **B23p** *1/00*

U.S. Cl. 204—129.1 **26 Claims**



1. A process of manufacturing semiconductor devices which comprises the steps of:

forming an insulating layer having a closed pattern on one surface of a semiconductor substrate,

forming a deposited layer on the entire surface of the semiconductor substrate, the deposited layer being thin in the proximity of the edges of the surface of the insulating layer, and at least the portion of the deposited layer located on the insulating layer being conductive, and,

dipping the semiconductor substrate so treated in a bath of an etching solution wherein electrolytic etching is effected in a manner such that said portion of the deposited layer of conductive material on the insulating layer is connected as an anode whereby said portion of the deposited layer on the insulating layer is removed and the portion of the deposited layer encompassed by the insulating layer remains substantially unchanged.

3,849,271

ELECTROCHEMICAL DRILLING

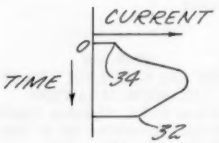
Frederick R. Joslin, Lebanon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 278,135, Aug. 4, 1972, abandoned.

Filed Dec. 13, 1973, Ser. No. 424,482

Int. Cl. B23p *1/00, 1/02, 1/12*

U.S. Cl. 204—129.2 **1 Claim**



1. In the electrochemical drilling of a hole completely through a workpiece, the steps of:

positioning a hollow electrode adjacent to a workpiece;

flowing an electrolyte through the electrode and against the workpiece;

applying a constant electrical voltage between the electrode and the workpiece across the electrolyte;

advancing the electrode at a constant rate toward the workpiece for the drilling of the hole while maintaining the electrolyte flow and voltage substantially constant;

measuring the magnitude of electric current flow between the electrode and the workpiece through the electrolyte as the electrode is advanced toward the workpiece and drilling proceeds, the electric current first increasing as the drilling proceeds until electric current reaches a maxi-

mum value at initial perforation, and thereafter decreasing as drilling proceeds until it reaches a predetermined value corresponding to the point of advancement of the electrode at which a uniform hole is completed through the workpiece; and automatically

terminating the drilling operation when the electric current reaches said predetermined current value.

3,849,272

PROCESS FOR EXACT ELECTROCHEMICAL WORKING OF WORKPIECES OF DIFFERENT SHAPE

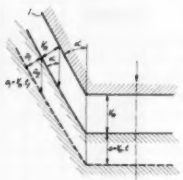
Jan Zubak, Ostrov, Czechoslovakia, assignor to Vyskumny ustav Automatizacie a mechanizacie, Nove Mesto nad Vahom, Czechoslovakia

Filed Oct. 15, 1971, Ser. No. 189,634

Claims priority, application Czechoslovakia, Dec. 8, 1970, 8247/70

Int. Cl. B23p *1/14, 1/04*

U.S. Cl. 204—129.25 **6 Claims**



1. A process for electrochemically working a workpiece using an electrode tool moving relatively thereto, wherein said workpiece is finished to the shape of said tool having a portion of its surface perpendicular to the relative direction of movement and a portion of its surface inclined at an angle to the relative direction of movement, comprising the steps of introducing an electrolyte between said tool and said workpiece and applying a current across said electrolyte, the improvement comprising adjusting, with respect to the surface inclined to the perpendicular surface at least one of the following parameters, the applied voltage, the conductivity of the electrolyte, the surface of the electrode tool or the time of working so that the ratio of said adjusted parameter to the corresponding parameter with respect to the surface perpendicular to the relative direction of movement is equal to $\sin^2$ of the angle which said inclined surface makes with the relative direction of movement.

3,849,273

METHOD OF AND APPARATUS FOR RADIUSSING AN EDGE OR EDGES OF A METALLIC AEROFOIL BLADE

Graham Frederick Johnson, 12 Forge Mill Rd., Redditch, England

Filed Jan. 4, 1973, Ser. No. 321,004

Int. Cl. B23p *1/00, 1/04*

U.S. Cl. 204—129.6 **7 Claims**

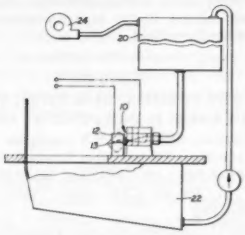
1. A method of radiussing a longitudinal edge of a metallic aerofoil blade, comprising the steps of:

placing, in spaced relationship with the longitudinal edge of the metallic aerofoil blade, the working face of an electrode, said working face;

a. having a slit, extending parallel and directly opposite to said edge, for discharge of electrolyte against said edge, and

b. being so configured that no constraint is placed by said working face upon the flow of electrolyte leaving said slit,

passing a stream of electrolyte through said slit, against said edge, and thence around both sides of said aerofoil blade, and applying an electric current to the electrode and blade in such a manner that the electrode is cathodic and the blade is anodic,



thereby performing electrolytic machining by free flow of said stream of electrolyte to produce a curve of constantly varying radius around the edge of the blade.

3,849,274

PROCESS FOR COUPLING ORGANIC MOLECULES

Ellis K. Fields, River Forest, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed July 2, 1973, Ser. No. 375,333

Int. Cl. B01j *1/10*

U.S. Cl. 204—158 R **11 Claims**

1. A process for coupling organic molecules involving the step of irradiating an organic compound containing at least one abstractable hydrogen with ultraviolet light in the presence of hexachlorobenzene, hexabromobenzene, or hexaiodobenzene.

3,849,275

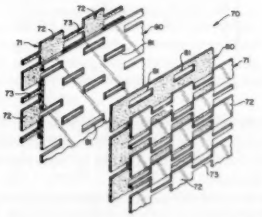
METHOD AND APPARATUS FOR REMOVING AND/OR SEPARATING PARTICLES FROM FLUID CONTAINING THE SAME

James T. Candor, 5440 Cynthia Ln., Dayton, Ohio 45429

Division of Ser. No. 263,605, June 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, July 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 25,938, April 6, 1970, , which is a continuation-in-part of Ser. No. 864,851, Oct. 8, 1969, , which is a continuation-in-part of Ser. No. 811,421, March 28, 1969, abandoned. This application July 27, 1973, Ser. No. 383,255

Int. Cl. B01k *5/00*

U.S. Cl. 204—180 R **12 Claims**



1. A method for separating particles from a fluid carrying the same comprising the steps of directing said fluid through an inlet means of a passage defining means having an outlet means, electrostatically directing at least some of said particles intermediate said inlet means and said outlet means solely

by an electrostatic action, and removing said fluid from said outlet means, said step of electrostatically directing at least some of said particles comprising the step of creating a plurality of non-uniform electrostatic fields with each field at least partially extending across said passage means and with the higher intensity portion of each field being substantially oppositely located relative to the higher intensity portion of an adjacent non-uniform field.

3,849,276

PROCESS FOR FORMING REACTIVE LAYERS WHOSE THICKNESS IS INDEPENDENT OF TIME

James H. Greiner, Millwood, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 19, 1971, Ser. No. 125,993
Int. Cl. C23c *13/00, 15/00*
U.S. Cl. 204—192 **27 Claims**

1. A method for forming reactive layers of controlled thickness on base materials, said reactive layers being combinations of the base material and at least one constituent which reacts with said base material, comprising:

bringing said reactive constituent to said base material in a substantially vacuum environment for reaction thereon to grow said reactive layer at a first rate;

removing said reactive layer simultaneously with said growth, the removal of said reactive layer occurring at a seond rate;

adjusting said first and second rates to be equal for a desired final thickness of said reactive layer;

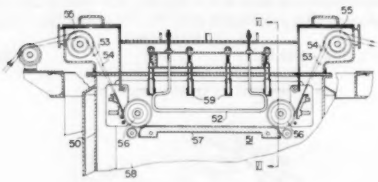
continuing said growth and said removal at least until said first and second rates of growth and removal respectively are equal, at which time a final thickness of said reactive layer is achieved.

3,849,277

ELECTROPLATING AND CONVEYING APPARATUS FEATURING ROTATION OF ARTICLES TO BE PLATED RELATIVE TO CATHODE MEMBER

Akira Miyata; Hideyo Okubo; Chikayoshi Tomita, and Akio Suzuki, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 83,714, Oct. 26, 1970, Pat. No. 3,740,323. This application June 13, 1973, Ser. No. 369,757
Claims priority, application Japan, Jan. 30, 1970, 45-7967
Int. Cl. B65g *49/02*
U.S. Cl. 204—202 **11 Claims**



1. A molten salt electroplating apparatus comprising:

a vessel adapted to contain molten salt electroplating bath;

cathode belt means adapted to receive articles to be plated thereon;

a fastener belt means adjacent said cathode belt means and having a plurality of spaced projections thereon, said projections extending above said cathode belt and being adapted to receive the articles to be plated therebetween and to maintain the articles on the cathode belt means in a predetermined spaced apart relationship with said articles in electrical contact with said cathode belt means;

means for moving said cathode belt means through said electroplating bath at a first rate of speed;

means for moving said fastener belt means through said electroplating bath in the same direction as that of said cathode belt means and a second rate of speed different from said first rate of speed of movement of said cathode belt means so that the articles to be coated are rotated relative to said cathode belt means and relative to said fastener belt means by said movement of said cathode belt means and said fastener belt means through said electroplating bath at said different rates of speed, to thereby uniformly plate said articles as they are fed through said electroplating bath; and

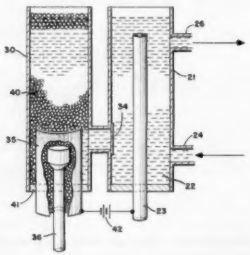
means for applying direct current to both the cathode belt means and said fastener belt means.

3,849,278

ELECTROLYTIC SYSTEM

Frederick W. Sanders, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed May 11, 1972, Ser. No. 252,285
Int. Cl. C01c *3/12;* **B01k** *1/00*
U.S. Cl. 204—237 **7 Claims**



1. In an apparatus for conducting electrolytic reactions, said apparatus including an anode and at least one other electrode which acts as a cathode relative to said anode, and means defining a current path for flow of current from one electrode to the other electrode the flow of current tending to produce a gas at least at one of said electrodes during electrolysis, the improvement comprising:

a. a fixed static bed of solid particles selected from the group consisting of carbon particles, activated carbon particles, and platinized compound particles, positioned in a fixed, static condition adjacent one of said electrodes and adapted to receive the gas electrolytically produced at said one of said electrodes,

b. means to introduce a second gas capable of entering into an oxidation-reduction reaction with the gas electrolytically produced at said one of said electrodes directly into said fixed static bed of solid particles, and

c. means to introduce an aqueous solution into contact with said solid particles, said solid particles being essentially inert with respect to said electrolytically produced gas, said second gas, said aqueous solution, and the reaction product of said oxidation-reduction reaction and each solid particle being wetproofed by treatment with a substance not wetted by said aqueous solution in order to effectively promote the non-electrolytic oxidation-reduction between said gases.

3,849,279

APPARATUS FOR SEALING MECHANICAL CONNECTION AT BIPOLAR BARRIER SHEET

Barry M. Barkel, Saline, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 17, 1973, Ser. No. 425,138
Int. Cl. B01k *3/10*
U.S. Cl. 204—254 **5 Claims**

1. In a bipolar diaphragm electrolytic filter press cell for the production of chlorine from aqueous alkali metal chloride

solutions wherein the metal anode and metal cathode of adjoining cells are in direct electrical connection with each other and said anode and cathode are maintained in spaced relationship by an electrically inactive barrier sheet between them, the improvement of independently maintaining proper electrical and mechanical connections between the anode and cathode of adjacent cells while preventing electrolyte and gas flow through the cell barrier joint between said anode and cathode comprising in combination

1. said barrier sheet being molded around at least one valve metal connector rod, said connector rod having a valve metal circumferential restraining flange attached thereto

and positioned substantially equidistant from each end of said rod, said flange being substantially equidistant from and substantially parallel to both faces of said barrier sheet so that both ends of said rod are exposed to an electrolyte and removed from the face of said barrier sheet, and

2. said rod having attached to one of its ends a metal anode and having attached to the other end of said rod a ferrous metal cap, with a metal cathode attached to said cap

whereby an electrical and mechanical connection is made between adjacent cells without danger of connector rod slippage or electrolyte leakage around said rod.

3,849,280

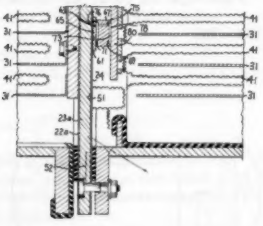
ELECTROLYTIC CELL INCLUDING MEANS FOR PREVENTING ATOMIC HYDROGEN ATTACK OF THE TITANIUM BACKPLATE MEMBER

Carl W. Raetzsch; William B. Darlington, and Hugh Cunningham, all of Corpus Christi, Tex., assignors to PPG Industries Inc., Pittsburgh, Pa.

Division of Ser. No. 158,695, July 1, 1971, Pat. No. 3,759,813, which is a continuation of Ser. No. 55,680, July 17, 1970, abandoned. This application Mar. 1, 1973, Ser. No. 337,050The portion of the term of this patent subsequent to Sept. 18, 1990, has been disclaimed.

Int. Cl. B01k *3/10*

U.S. Cl. 204—256 **6 Claims**



1. An electrolyzer comprising a plurality of bipolar cells in series having bipolar units, at least one of said bipolar units comprising:

a backplate providing a barrier between adjacent cells in the series;

a cathode extending from one surface of said backplate and in electrical contact therewith; and

an anode extending from the opposite surface of said backplate and in electrical contact therewith;

said backplate comprising:

a catholyte-resistant member having two surfaces;

a valve metal member bonded to the surface of the catholyte resistant member opposite the surface from which the cathode extends; and

means on the surface of the catholyte resistant member from which the cathode extends, interposed between the cathode and the catholyte resistant member for preventing the migration of atomic hydrogen through the catholyte resistant member.

3,849,281

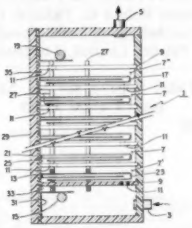
BIPOLAR HYPOCHLORITE CELL

John E. Bennett, Painesville; James W. Burkhardt, Mentor, and Richard E. Loftfield, Chardon, all of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed July 23, 1973, Ser. No. 381,730

Int. Cl. B01k *3/04*

U.S. Cl. 204—268 **6 Claims**



1. An electrolytic cell comprising:

A. a substantially vertically disposed container having electrolyte inlet means in the lower portion thereof and electrolysis product outlet means in the upper portion;

B. a plurality of horizontally disposed, electrically nonconductive, partitions dividing said container into a plurality of cell units;

C. a terminal, foraminous, sheet-like, monopolar anode horizontally disposed in the first of said cell units;

D. a terminal, foraminous, monopolar cathode, horizontally disposed in the last of said cell units and comprising a U-shaped construction adapted to receive and encompass a foraminous, sheet-like anode;

E. means for impressing an electrolyzing current across said monopolar electrodes;

F. at least one bipolar electrode comprising

1. a sheet-like, foraminous, anode portion,

2. a U-shaped, foraminous, cathode portion adapted to receive and encompass a sheet-like anode, and

3. a conductive connecting portion joining said anode and cathode portions;

G. said bipolar electrode being horizontally disposed in adjacent cell units on opposite sides of a partition so that

1. said anode portion is encompassed by a next-adjacent cathode and is parallel to said partition,

2. said cathode portion encompasses a next-adjacent anode and is parallel to and spaced apart from the opposite side of said partition and the next-adjacent partition, and

3. said connecting portion is held between an edge of said partition and a container sidewall; and

H. means for passing electrolyte and products of electrolysis from the bottom to the top of the container through the partition of each of the cell units in sequence.

3,849,282
METAL ELECTRODES AND COATINGS THEREFOR

Louis Degueldre; Charles Killens, and Louis Bourgeois, all of Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium

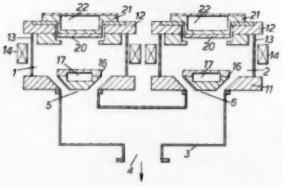
Filed July 3, 1972, Ser. No. 268,552
Claims priority, application Luxembourg, July 9, 1971, 63506
Int. Cl. B01k *3/06*
U.S. Cl. 204—290 F 5 Claims

1. A metallic electrode for electrochemical processes comprising a metal support and on at least a portion of said support a conductive coating consisting essentially of a compound ABO_4 with a structure of the rutile-type, where A represents an element in the trivalent state selected from the group consisting of Rh, Al, and Ga and B represents an element in the pentavalent state selected from the group consisting of Sb, Nb and Ta, and an oxide of the type MO_2 where M is selected from the group consisting of Ru and Ir, and the mole ratio of ABO_4 to MO_2 is from 1/1 to 1/6.

3,849,283
SPUTTERING APPARATUS

Geoffrey N. Jackson; Robert G. Pickard; Graham Brackley, and David W. Satchell, all of Leatherhead, England, assignors to E.R.A. Patents Limited, Leatherhead, Surrey, England

Filed May 1, 1972, Ser. No. 249,162
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 7 Claims



1. Sputtering apparatus for use with a radio frequency supply source, said apparatus including an evacuable enclosure, a double electrode arrangement including two individual electrodes within said enclosure having means affording connection of said electrodes to opposite terminals of a radio frequency source respectively, and wall means arranged to electrically isolate the individual electrodes of said arrangement by separating the electric fields associated with said electrodes when said radio frequency source is energized and defining two electrically separate sputtering areas, and two work supporting table means, one located in each of said areas respectively.

3,849,284
APPARATUS METHOD AND VALVE FOR ELECTRODEPOSITING A COATING ON INTERIOR SURFACES OF CONTAINER BODIES

Hans Kossmann, Barrington, Ill., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 285,643, Sept. 1, 1972,. This application July 2, 1973, Ser. No. 375,458
Int. Cl. C23b *13/00*, *5/68*
U.S. Cl. 204—300 8 Claims

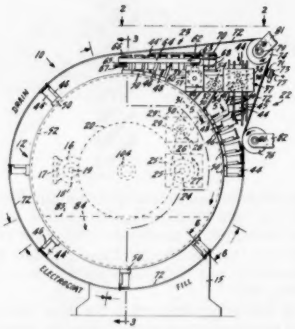
1. A fluid valve for electrodepositing systems wherein an electrolytic fluid and electric current insulatedly pass through the valve, which comprises:

a fixed exterior housing mountable on a wall of a reservoir containing the fluid, the exterior housing having a back wall with apertures therein communicating with the interior of the reservoir,

a moveable interior housing, interior of and slidingly engaged with the exterior housing, the interior wall of the interior housing defining a central valve chamber having a mouth opposite the back wall,

a resilient sealing ring mounted in the mouth,

a valve member fixedly connected at one of its ends to the back wall, extending axially into the chamber and having legs fixed to and extending transverse to its axis, the axial portion of the valve member having a conductive core connectable to circuitry,



an electrode connected to and projecting from the exterior of the valve member,

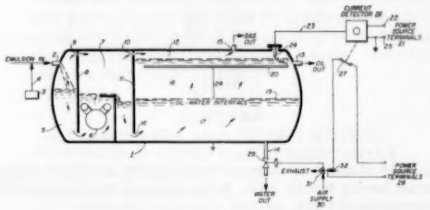
means for sealing and preventing fluid from passing between the housings, and

biasing means between the housings for flexibly biasing the sealing ring of the interior housing in sealing engagement with the valve member legs to seal the fluid valve chamber, the biasing means being inwardly compressible toward the back wall by an axial force, so that when the force is sufficient to compress the sealing ring and biasing means, a passageway is created between the valve member legs and the sealing ring which allows fluid to flow from the reservoir to the exterior of the valve chamber.

3,849,285
ELECTRIC CONTROL SYSTEM

Floyd Leon Prestridge, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

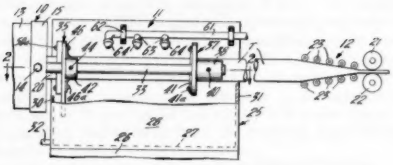
Filed Sept. 15, 1972, Ser. No. 289,716
Int. Cl. B03c *5/02*
U.S. Cl. 204—305 2 Claims



1. A system is adapted to supplying power to an electric treater of oil field emulsions, including,

a pair of electrical power source terminals,
a circuit connected to the terminals and adapted to include a portion comprising the fluid oil-water mixture of an emulsion,
means connected to the circuit to manifest the power applied to the circuit,
means maintaining a predetermined length for the circuit portion between the terminals,
and means varying the electrical conductivity of the portion of the circuit, comprising a control system for regulating chemical injected into the emulsion, which chemical affects the electrical conductivity of the emulsion of the circuit portion.

3,849,286
TREATMENT OF THERMOPLASTIC TUBING
Roger Brandt, Wayland, and John William Piltzecker, Shrewsbury, both of Mass., assignors to American Can Company, New York, N.Y.
Filed Dec. 13, 1962, Ser. No. 244,322
Int. Cl. C08f *47/22*; **B29d** *23/04*
U.S. Cl. 250—325 **3 Claims**

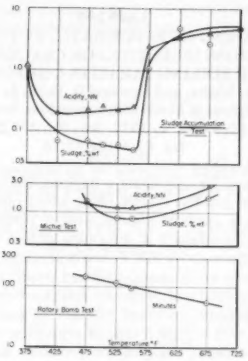


1. Apparatus for the surface treatment and sizing of thermoplastic tubing formed by extruding heated thermoplastic material through an annular extruder nozzle, comprising:
an elongate, internal forming member mountable at the nozzle of the extruder in closely adjacent, coaxial alignment with the extruder nozzle;
electrode means encircling said forming member in spaced relation thereto;
means for continuously passing said tubing along said forming member in tight fitting relation therewith to size said tubing;
means for impressing a high alternating voltage between said electrode means and said forming member while said tubing is being sized to produce a corona discharge treatment of the exterior surface of said tubing; and
means for cooling said tubing as it leaves the corona discharge zone, including means for internally cooling said forming member for progressively cooling the interior of said tubing, and coolant spray means disposed away from said electrode means in the direction of the discharge end of said forming member for directing a coolant spray over the exterior of said tubing.

3,849,287
COAL LIQUEFACTION PROCESS
William K. T. Gleim, Island Lake, and Mark J. O'Hara, Mt. Prospect, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Feb. 5, 1973, Ser. No. 329,507
Int. Cl. C10g *1/06*
U.S. Cl. 208—8 **2 Claims**

1. A process for the production of a hydrocarbonaceous liquid which comprises solvent extracting coal with a solvent at a temperature of about 600°F. to about 850°F., a pressure of about 100 to about 350 atmospheres and a solvent/coal weight ratio of about 1:2 to about 10:1, said solvent being a hydrogenated bottoms product from vacuum distillation of crude petroleum and having an initial normal boiling point above about 400°F.

3,849,288
MANUFACTURE OF TRANSFORMER OILS
Donald Milstein, Cherry Hill, and Donald F. Hill, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Mar. 26, 1973, Ser. No. 344,817
Int. Cl. C10g *23/02*
U.S. Cl. 208—14 **8 Claims**



1. A process for manufacturing a transformer oil which consists essentially of selecting a naphthenic distillate boiling in the range of about 450°F. to about 775°F., characterized by an aromatics content less than 30 percent, an alkane content less than 5percent, the balance being substantially all naphthenes and having a flash point not less than about 275°F., a viscosity at 100°F. of from about 55 to about 75 SUS and a specific gravity of about 0.865 to about 0.905; contacting said distillate with hydrogen in the presence of a hydrogenation catalyst at a temperature of about 550°F. at a pressure in the range from about 200 to about 5,000 psig, at a space velocity between about 0.2 and about 5 volumes per hour per volume of catalyst and a hydrogen circulation rate from about 250 to about 15,000 s.c.f. per barrel percolating the resulting hydrotreated oil through clay, utilizing a volume ratio of oil to clay between about 5 and about 10 and recovering from such operation a product constituting a transformer oil.

3,849,289
FLUIDIZED PLATINUM REFORMING FOLLOWED BY FIXED-BED PLATINUM REFORMING
Alexis Voorhies, Jr., 2569 E. Lakeshore Dr., Baton Rouge, La. 70810
Filed Feb. 23, 1973, Ser. No. 335,028
Int. Cl. C10g *35/08*
U.S. Cl. 208—65 **15 Claims**

1. A staged reforming process comprising charging a naphtha feedstock comprising naphthenes and paraffins to a first reforming zone, contacting said feedstock in the presence of hydrogen in said zone with a fluidized bed of reforming catalyst comprising a noble metal or mixtures thereof composited with a support at a temperature of from about 750°F. to about 850°F., at a pressure of from about 75 to about 250 psig., thereby substantially converting said naphthenes to aromatics with minimum hydrocracking of said paraffins; charging at least a portion of the effluent stream from said first reforming zone to a second reforming zone, contacting said stream in the presence of hydrogen, within said zone which contains a plu-

rality of fixed-bed catalyst reaction stages arranged in series, with intermediate reheating heating between beds to provide near isothermal conditions, said beds of reforming catalyst comprising a noble metal or mixtures thereof composited with a support, said second reforming reaction being conducted at a temperature of from 850° to about 1,050°F. and at a pressure of from about 75 to about 250 psig., thereby selectively dehydrocyclizing said paraffins to aromatics with a minimum of hydrocracking of said paraffins; and thereafter recovering the reformate.

3,849,290

UPGRADING OF REFORMATES BY CATALYST COMPOSITIONS SELECTIVE FOR CRACKING LOW AND HIGH BOILING PARAFFIN COMPONENTS

John J. Wise, Media, and Samuuel D. Burd, Jr., Yardley, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 2, 1972, Ser. No. 277,201
Int. Cl. C10g *37/10*
U.S. Cl. 208—66 **8 Claims**

1. A method for upgrading a naphtha charge composition boiling in the gasoline boiling range which comprises:

reforming a naphtha charge with a platinum reforming catalyst maintained at reforming conditions including a temperature above 800°F. and a pressure below 700 psig to produce an aromatic enriched product effluent comprising normal and branched hydrocarbons,

passing aromatic enriched product of said reforming in contact with a ZSM-5 type of crystalline aluminosilicate zeolite catalyst composition provided with major axis elliptical pore size in the range of about 6 to about 9 Angstroms under conditions for selectively cracking singly branched and normal hydrocarbons comprising C_7 and higher boiling hydrocarbons, and

thereafter subjecting the product of the above selective cracking to contact with a crystalline aluminosilicate zeolite hydrocracking catalyst of the erionite type providing an average pore size less than about 6 Angstroms under temperature and pressure conditions selected to crack n-paraffins boiling below C_7 hydrocarbons without substantial cracking of multibranched hydrocarbons and C_7 to C_9 alkyl aromatics in the aromatic enriched product.

3,849,291

HIGH TEMPERATURE CATALYTIC CRACKING WITH LOW COKE PRODUCING CRYSTALLINE ZEOLITE CATALYSTS

Hartley Owen, Belle Mead, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 5, 1971, Ser. No. 186,639
Int. Cl. C10g *37/02, 11/18;* **B01j** *9/20*
U.S. Cl. 208—78 **16 Claims**

1. In a dual riser hydrocarbon conversion operation employing fluidizable catalyst particles, the improved method of operation which comprises,

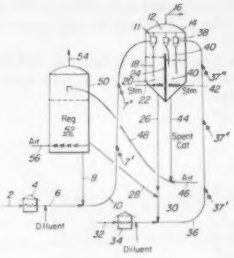
regenerating a catalyst mixture comprising a large pore crystalline zeolite of the faujasite type in admixture with from 10 to about 90 weight percent of a smaller pore crystalline zeolite of the ZSM-5 type under conditions to heat the catalyst mixture to an elevated temperature in the range of 1,000°F. up to about 1400°F.,

passing heated catalyst to the inlet of a first riser conversion zone for admixture with gaseous materials such as dry gas and/or C_5 and lighter gaseous hydrocarbons to form a first suspension therewith,

passing said first suspension in admixture with a fresh gas oil feed upwardly through said first conversion zone under elevated temperature cracking conversion conditions of at least 1000°F. and a hydrocarbon residence time less than about 12 seconds to cyclonic separation of the suspension into a hydrocarbon phase and a low coke containing catalyst phase, recovering the hydrocarbon phase and stripping the catalyst phase,

passing stripped catalyst mixture of relatively low coke level separated from said first conversion zone to the inlet of a second riser conversion zone in combination with an increment of the freshly regenerated catalyst,

forming a second suspension of catalyst with gaseous materials such as dry gas and/or C_5 and lighter gaseous hydrocarbons for passage upwardly through said second riser



conversion zone,

passing said second suspension with higher coke producing hydrocarbon feed upwardly through said second conversion zone at a temperature of at least 950°F. for a hydrocarbon residence time in the range of 2 to 15 seconds and a higher catalyst to oil ratio than employed in said first conversion zone,

cyclonically separating the second suspension at the discharge of the second conversion zone into a second hydrocarbon phase and a second catalyst phase,

recovering the second hydrocarbon phase and stripping the second catalyst phase of entrained hydrocarbons, and

passing stripped second phase catalyst to said catalyst regeneration.

3,849,292

PROCESS FOR THE CONVERSION OF HEAVY HYDROCARBON CHARGE STOCKS

William K. T. Gleim, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 283,900, Aug. 25, 1972, abandoned. This application Dec. 18, 1972, Ser. No. 316,169
Int. Cl. C10g *13/02;* **C01b** *33/28*
U.S. Cl. 208—111 **8 Claims**

1. A process for the conversion of a sulfurous, heavy hydrocarbonaceous charge stock, to produce desulfurized, lower-boiling hydrocarbon products, which comprises reacting said charge stock with hydrogen in contact with a catalytic composite of a porous alumina-containing carrier material, from about 1.0 percent to about 30.0 percent by weight of an alkali metal component and from about 0.1 percent to about 15.0 percent by weight of at least one metal component from Groups IV B, V B and VI B, a portion of said alkali metal component being in the free state and said carrier material being selected from the group consisting of alumina, alumina-silica, crystalline aluminosilicate, and crystalline aluminosilicate dispersed in an alumina-silica matrix.

3,849,293
HYDROCRACKING PROCESS UTILIZING REJUVENATED CATALYST

John W. Ward, Yorba Linda, Calif., assignor to Union Oil company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 121,536, March 5, 1971, abandoned. This application Feb. 22, 1973, Ser. No. 334,873
Int. Cl. C10g *13/02*
U.S. Cl. 208—111 9 Claims

1. A process for the hydrocracking of a hydrocarbon feedstock to produce lower boiling hydrocarbons, which comprises subjecting said feedstock in admixture with added hydrogen to hydrocracking conditions of pressure and temperature in contact with a catalyst comprising a non-zeolitic Group VIII noble metal supported on a siliceous zeolite carrier which also, as originally prepared, contained zeolitic mono- and/or divalent metal cations, said catalyst having been previously subjected to thermal and/or hydrothermal conditions resulting in a maldistribution of said Group VIII noble metal on said carrier with resultant reduction in hydrogenation activity and in a deleterious migration of said zeolitic metal cations resulting in a reduction in cracking activity, and which has thereafter been rejuvenated to greater than its original fresh activity by a process which comprises:

A. digesting said catalyst in an oxidized or sulfided state with a reagent consisting essentially of a 0.1 – 30 weight-percent aqueous ammonia solution containing a dissolved ammonium salt, and correlating the contacting time with the temperature and reagent strength so as to extract from said catalyst at least a substantial portion of said zeolitic metal cations while retaining in the catalyst at least about 70 percent of said Group VIII noble metal;

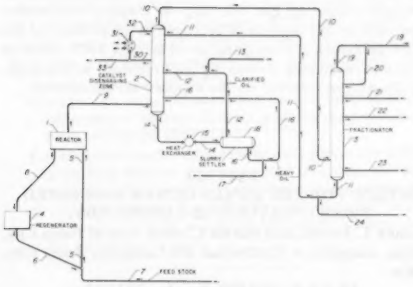
B. separating said catalyst from the resulting ammoniacal extract of zeolitic metal cations; and

C. drying and calcining the separated catalyst.

3,849,294
CATALYTIC CRACKING PROCESS IMPROVEMENT

Andrew C. Hansen, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 15, 1973, Ser. No. 332,867
Int. Cl. C10g *11/18*
U.S. Cl. 208—162 12 Claims

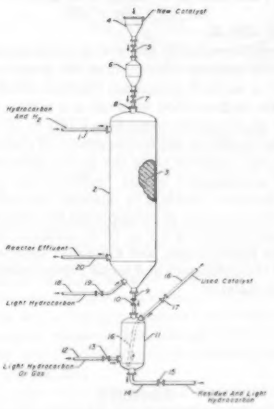


1. In a fluidized catalytic cracking process in which a feed stock contacts a fluidized catalyst in a reaction zone at conditions to effect the cracking of said feed stock into cracked products and wherein catalyst is separated from a vaporous effluent material from said reaction zone, which vaporous effluent material contains entrained catalyst particles, the improvement which comprises passing said vaporous effluent material into a catalyst disengaging zone and therein contacting the same with a liquid hydrocarbon stream at conditions to condense a portion of said vaporous effluent material and to remove entrained catalyst from said vaporous effluent, recovering from said catalyst disengaging zone a liquid oil bottoms stream comprising said catalyst and at least a portion of said liquid hydrocarbon and condensed effluent material, passing remaining catalyst-free vaporous effluent material from said catalyst disengaging zone into a fractionation zone and therein fractionally condensing the same to form an overhead gasoline-containing vapor and a heavy cycle oil stream substantially free of entrained catalyst particles and boiling in the range of from above about 600°F. to about 1,000°F., supplying at least a portion of said catalyst-free heavy cycle oil stream to the catalyst disengaging zone as at least a portion of said liquid hydrocarbon stream, and condensing said gasoline-containing vapor.

3,849,295
CATALYST REMOVAL IN MOVING BED PROCESSES

George E. Addison, Mt. Prospect, Ill., assignor to Universal Oil Products Company, Des Moines, Ill.

Filed Aug. 23, 1972, Ser. No. 283,000
Int. Cl. C10g *11/16*
U.S. Cl. 208—166 2 Claims



1. In a process in which a downward moving-bed of catalyst is utilized in a hydrocarbon conversion process having reactants present in a reaction zone as a liquid phase, the method of removing catalyst from the bottom of a reaction vessel which comprises the steps of:

a. passing a quantity of catalyst and entrained liquid phase reactants from a reaction zone and into a separation zone through a fluid flow controlling valve means;

b. flushing liquid phase reactants entrained with the catalyst from the separation zone by passing a light liquid hydrocarbon upwardly over the catalyst in the separation zone and through the valve means and into the reaction vessel;

c. removing the light liquid hydrocarbon from the reaction vessel through the same outlet means used to remove the liquid phase reactants;

d. closing the valve means; and,

e. drying the catalyst within the separation zone by passing a stream of gas over the catalyst.

3,849,296

CATALYST COMPRISING ZINC OXIDE, SILICA AND ALUMINA AND PROCESSES EMPLOYING SAME

Albert L. Hensley, Jr., Munster, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed June 14, 1972, Ser. No. 262,572
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **16 Claims**

1. A process for the hydrodesulfurization of a hydrocarbon feedstock, which process comprises contacting in a reaction zone said feedstock with a catalytic composition in the presence of hydrogen and under hydrodesulfurization conditions, which catalytic composition comprises a hydrogenation component comprising a metal of Group VIA of the Periodic Table of Elements and a metal of Group VIII of the Periodic Table on a solid catalytic support comprising a composite of zinc oxide, silica, and a catalytically active alumina, each metal of said hydrogenation component being present in the elemental form, as the oxide, as the sulfide, or as a combination thereof.

3,849,297

PROCESS FOR REMOVING METALS FROM PETROLEUM RESIDUA

Robert Byron Long, Atlantic Highlands, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed June 8, 1972, Ser. No. 260,757
Int. Cl. C10g *17/00*
U.S. Cl. 208—251 R **20 Claims**

1. A process for reducing the level of metal contaminants in a hydrocarbon material selected from the group consisting of crude oil or a residual petroleum fraction which comprises contacting the hydrocarbon material at a temperature below 400°C. with an extractant comprising 0.001 to 10 wt. percent, based on the weight of the hydrocarbon, of elemental sulfur and a promoter selected from the group consisting of supported and unsupported oxides, sulfides, and selenides of vanadium, tantalum, niobium or mixtures thereof, and in the case where the promoter is unsupported the promoter is present in an amount of from 0.1 to 10 wt. percent, based on the weight of the hydrocarbon, and thereafter separating at least a portion of the extractant and metal contaminants from said hydrocarbon material.

3,849,298

PROCESS FOR PREPARING PURIFIED NORMAL PARAFFINS

Eiichi Funakubo, Ashiya; Tetsuo Matsuo, Kobe; Takeshi Taira, Kobe; Taichi Kamada, Kobe; Hiroshi Harada, Kobe; Shoichiro Tanimura, Kobe, and Masanori Kubo, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 24, 1972, Ser. No. 300,404
Claims priority, application Japan, Oct. 21, 1971, 46-83771; Oct. 21, 1971, 46-83772
Int. Cl. C10g *25/00*
U.S. Cl. 208—310 **21 Claims**

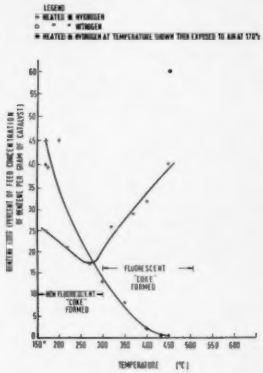
1. Process for purifying normal paraffins which are suitable for use as starting materials or raw materials for feed or food petroleum fermentation products, comprising the steps of subjecting normal paraffins containing one or more carcinogenic polycyclic aromatic hydrocarbons to adsorption treatment in an adsorbent consisting essentially of alumina or a mixture of alumina and up to 15 weight percent of silica thereby to reduce said carcinogenic polycyclic aromatic hydrocarbons to less than 1 ppb, said alumina having a particle size of from 8 to 100 mesh, said adsorption treatment being carried out at a temperature of from 20°C to 100°C, and said alumina having a surface area of 100 m^2/g or more.

3,849,299

INHIBITING THE COKE FORMING TENDENCY OF SORBENTS

Kenneth Hugh Bourne, Sunbury-on-Thames; Evan Ellis Davies, London, and Robert Chalmers Pitkethly, Camberley, all of England, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 77,893, Oct. 5, 1970, abandoned.
This application Dec. 6, 1972, Ser. No. 312,531
Int. Cl. C07c *7/12*
U.S. Cl. 208—310 **8 Claims**



1. In a sorption process for the separation of hydrocarbon mixtures wherein some of the adsorbed compounds form coke by reacting with oxygen and in which the sorbent is a crystalline zeolite of substantially uniform pore size and free of hydrogenating metals and in which the zeolite sorbent as used in the sorption process has been exposed before such use to an oxygen-containing gas, the step of treating the zeolite sorbent with an atmosphere of hydrogen in the absence of the sorption feedstock at a temperature of at least 300°C after its exposure to the oxygen-containing gas to remove substantially all of the oxygen retained on the exposed zeolite sorbent.

3,849,300

METHOD FOR THE SEPARATION OF SATURATED FROM UNSATURATED COMPOUNDS

Theodore T. Martin, and Marvin C. Allen, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

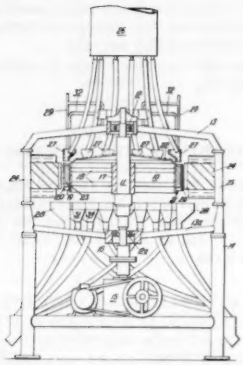
Filed July 25, 1973, Ser. No. 382,627
Int. Cl. C07c *7/12*
U.S. Cl. 208—310 **8 Claims**

1. In a method for separating saturated from unsaturated compounds present in a mixture via adsorbing said mixture on an adsorbent selected from the group consisting of silica gel, alumina, and fluorosil and eluting with a solvent for the subsequent quantitative analysis thereof, wherein the improvement comprises, saturating said adsorbed mixture with halogen vapor.

3,849,301
MAGNETIC SEPARATOR

Hugh Thomas Reading, Goonellabah, New South Wales, Australia, assignor to Readings of Lismore Pty., Limited, Lismore, New South Wales, Australia

Filed Dec. 7, 1972, Ser. No. 313,182
Claims priority, application Australia, Dec. 15, 1971, 7394/71
Int. Cl. B03c *1/00, 1/10*
U.S. Cl. 209—214 **10 Claims**



1. A magnetic separator-comprising:

a. a magnetically impermeable rotor mounted on a vertically oriented shaft and having at least one annular through passage constituting or formed on its periphery and defined by spaced-apart walls, the walls being formed from a material having non-magnetic characteristics, and the or each through passage being disposed about the axis of rotation of the rotor,

b. a number of spacers of a magnetically permeable material extending in a radial direction between the walls of the or each passage, successive spacers, together with the passage walls, defining through channels into which magnetic particles in a fluid suspension may be fed to pass in a direction substantially parallel to the axis of the rotor,

c. a number of magnetic pole pieces surrounding the rotor and having their magnetic axes disposed radially with respect to the rotor, successive ones of the pole pieces being of opposite polarity whereby a magnetic field of maximum intensity is induced in the rotor spacers intermediate successive ones of the pole pieces;

d. means for feeding a composite containing magnetic particles in a fluid suspension into said channels adjacent successive ones of the pole pieces;

e. means also adjacent successive ones of the pole pieces for delivering a washing fluid for washing magnetic particles from within the channels;

f. means intermediate successive pole pieces for delivering a washing fluid to successive said channels, for washing non-magnetic particles from within the channels, and

g. separate means for collection of magnetic and non-magnetic particles which are passed or washing through the channels.

3,849,302
METHOD AND APPARATUS FOR SCREENING PAPER FIBER STOCK

Peter Seifert, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio

Filed Sept. 12, 1972, Ser. No. 288,288
Int. Cl. B07b *1/20*
U.S. Cl. 209—273 **16 Claims**

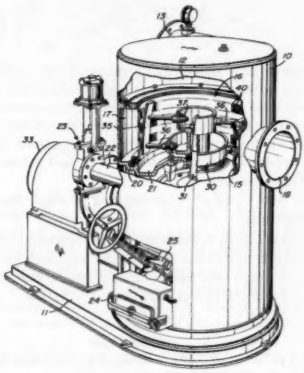
1. The method of screening a dilute suspension of paper fiber stock, comprising the steps of

a. continuously supplying the stock to one end of an annular supply chamber having as one wall thereof a cylindrical screen member having multiple slots therethrough extending generally parallel with the axis thereof,

b. maintaining a pressure difference from said supply chamber to the accepts side of said screen member to cause passage of accepted stock through said slots,

c. causing the stock in said supply chamber to form a tubular layer of substantial thickness and of substantially the same length as said screen member immediately adjacent the surface of said screen member in said supply chamber,

d. continuously rotating vane means in said supply chamber in a circular path adjoining said tubular layer at a sufficiently high speed to create a substantially tangentially



oriented steady hydraulic shear field in said tubular layer of stock with shear rates sufficiently high to cause elongated contaminant particles to be aligned generally tangentially of said screen member and thereby to flow past rather than through said slots,

e. said path being located in a radially intermediate position in said supply chamber and said vane means being spaced angularly from each other within said path to provide for circulation of stock between said tubular layer and the space on the opposite side of said path from said tubular layer by way of the gaps between said vane means,

f. continuously removing from the other end of said screen chamber a portion of said stock including such contaminant particles, and

g. continuously recirculating stock from said other end of said supply chamber to said one end thereof.

3,849,303
METHOD AND APPARATUS FOR UPGRADING WASTEWATER TREATMENT PLANTS

Wilbur N. Torpey, Douglaston, N.Y., assignor to Autotrol Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 293,594, Sept. 29, 1972,. This application Apr. 16, 1973, Ser. No. 351,179
Int. Cl. C02c *1/04, 5/10*
U.S. Cl. 210—4 **17 Claims**

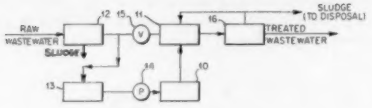
1. Process for the treatment of wastewater including carbonaceous and nitrogenous pollutants comprising the steps of,

a. removing settleable and floatable solids to obtain presettled wastewater;

b. supplying said presettled wastewater at a predetermined rate to a biological treatment unit;

c. said biological treatment unit employing partially submerged rotatable biological contactors having surface area for the growth and maintenance of organisms;

d. rotating said biological contactors at a predetermined peripheral velocity to alternately expose said surface area to wastewater and an oxygen containing atmosphere;
e. said predetermined rate and peripheral velocity being chosen to biochemically oxidize said carbonaceous and nitrogenous pollutants in said biological treatment unit;
f. supplying wastewater including mature organisms from said biological treatment unit to a denitrifying unit;
g. said denitrifying unit employing denitrifying organisms suspended in the wastewater to convert the nitrogen



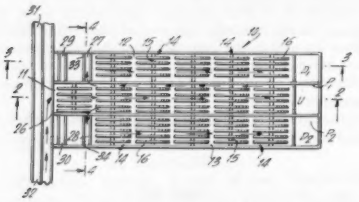
content of a substantial portion of said oxidized nitrogenous pollutants to nitrogen gas without the need for the addition of an external carbonaceous energy source;
h. creating currents in said wastewater in said denitrifying unit to maintain said denitrifying organisms in suspension;
i. supplying said wastewater from said denitrifying unit to a final clarifier;
j. said final clarifier removing sludge which includes mature organisms;
k. recirculating a portion of said removed sludge to said denitrification unit without said recirculated sludge passing through said biological treatment unit and;
l. wasting a portion of said removed sludge.

3,849,304

METHOD FOR THE PRIMARY AND SECONDARY TREATMENT OF WASTEWATER IN A UNITARY APPARATUS

Wilbur N. Torpey, Douglaston, and Richard A. Sullivan, Woodside, both of N.Y., assignors to Autotrol Corporation, Milwaukee, Wis.

Filed Aug. 9, 1973, Ser. No. 386,860
Int. Cl. C02c *1/04*
U.S. Cl. 210—14 **7 Claims**



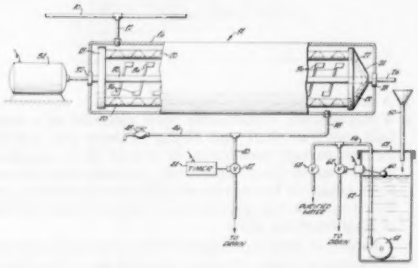
1. Method for the continuous treatment of wastewater comprising
a. providing a treatment tank having a primary bay and at least one secondary bay horizontally adjacent to said primary bay,
b. each of said bays including a lower settling zone and a vertically adjacent upper biological treatment zone,
c. introducing wastewater into the lower settling zone of said primary bay,
d. creating a flow of wastewater through the settling zone of said primary bay,
e. vertically directing said wastewater from the settling zone to the upper biological treatment zone of said primary bay,
f. creating a flow of wastewater through the biological treatment zone of said primary bay countercurrent to the direction of wastewater flow through the settling zone of said primary bay,
g. horizontally directing wastewater from the biological treatment zone of said primary bay to the biological treatment zone of said secondary bay,
h. creating a flow of said wastewater through the biological treatment zone of said secondary bay;
i. vertically directing said wastewater from the biological treatment zone of said secondary bay into the lower settling zone of said secondary bay,
j. creating a flow of said wastewater through the settling zone of said secondary bay countercurrent to the direction of wastewater flow through the biological treatment zone of said secondary bay, and
k. removing said wastewater from the settling zone of said secondary bay.

3,849,305

REVERSE OSMOSIS WATER PURIFYING SYSTEM FOR HOUSEHOLD USE

Serop Manjikian, P.O. Box No. 183, Del Mar, Calif. 92014

Continuation-in-part of Ser. No. 256,185, May 23, 1972,. This application Mar. 27, 1973, Ser. No. 345,447
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—116 **5 Claims**



1. A water purifying system having a reverse osmosis water purifying unit comprising a semipermeable membrane mounted on a porous support within a pressure resistant container, means for introducing feed water under pressure into said pressure resistant container, means for releasing concentrate from said pressure resistant container, and means for storing and dispensing purified water passing through the semipermeable membrane in said water purifying unit, in which the improvement comprises:
a. a pipe connecting water under household pressure to the feed inlet of said pressure resistant container;
b. said semipermeable membrane being mounted on a porous support which is rotatable within said pressure resistant container and having external means for rotating said porous support; and,
c. means including an on-off valve for automatically periodically releasing concentrate directly from said pressure resistant container to drain.

3,849,306

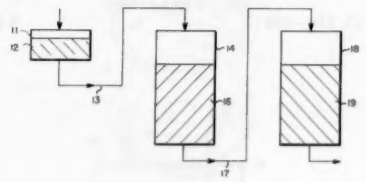
PROCESS AND APPARATUS FOR REMOVING IMPURITIES FROM CONDENSATE WATER

John R. Anderson, Cranbury, N.J., assignor to The Permutit Company, Inc., Paramus, N.J.

Continuation-in-part of Ser. No. 209,160, Dec. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 25,160, April 2, 1970, abandoned. This application June 5, 1973, Ser. No. 367,141
Int. Cl. B01j *1/08;* **C02b** *1/68*
U.S. Cl. 210—38 **7 Claims**

1. A process for removing impurities from condensate water containing sodium ions and ammonia consisting essentially of

passing said water in series through a first vessel containing a first bed consisting essentially of particulate strong acid cation exchange resin in the hydrogen or ammonium form, passing said water through a second vessel containing a second bed



consisting essentially of particulate strong base anion exchange resin in the hydroxide form and finally passing said water through a third vessel containing a third bed consisting essentially of particulate strong acid cation exchange resin in the hydrogen or ammonium form.

3,849,307

POLYALKYLENE POLYAMINE-ALDEHYDE-KETONE CONDENSATION POLYMER FLOCCULANTS AND RETENTION AIDS

Warren Thorne Grundner, Vincentown, N.J., assignor to Sybron Corporation, Rochester, N.Y.

Division of Ser. No. 69,178, Sept. 2, 1970, abandoned. This application May 5, 1972, Ser. No. 250,832

Int. Cl. C02b *1/20*; **B01d** *21/01*

U.S. Cl. 210—54 **4 Claims**

1. A process for removing finely divided suspended particles from aqueous liquids comprising:

a. adding a water soluble condensation polymer of polyalkylene polyamine, an aldehyde and a ketone, said condensation polymer having molar ratios from about 0.9 polyalkylene polyamine, 1.8 aldehyde and 0.5 ketone, to about 1.1 polyalkylene polyamine, 3.0 aldehyde and 1.1 ketone to said aqueous liquid containing finely divided suspended particles to cause flocculation of the suspended particles and

b. separating said liquid from said particles.

3,849,308

APPARATUS FOR SKIMMING FLOATING POLLUTION FROM A LIQUID SURFACE

Hulan Westerman, P.O. Box 118, Boothville, La. 70038

Filed Oct. 25, 1972, Ser. No. 300,601

Int. Cl. B01d *33/38*; **E02b** *15/04*

U.S. Cl. 210—98 **2 Claims**

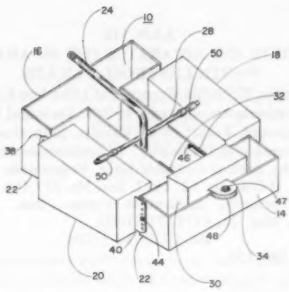
1. A rocking skimmer for collecting liquid from the surface of a body of water and comprising in combination:

a. an open-topped rigid container means, having walls extending upwardly from a closed horizontal bottom, for floating on said body of water and for collecting liquid from the surface thereof, said walls including end walls and side walls with one of said end walls being of less height than a second opposing end wall for the rapid submergence of said one end wall, and said side walls being constructed and arranged to provide said container means with greater width adjacent said end walls and a constriction therebetween for increasing the rate of flow of collected liquid through said constriction;

b. first flotation means exteriorly secured to said container means for keeping it afloat when filled with collected liquid and rockable about an axis transverse said constriction and the side walls of said container means;

c. second flotation means, having weight and buoyancy, interiorly secured in said container means adjacent said one end wall for said weight to rockably submerge said one end wall below the surface of said body of water and collect liquid therefrom over said one wall, and for said buoyancy responsive to said collected liquid, to rockably raise said submerged one end wall and flow said collected liquid oppositely therefrom to further raise said one end wall clear of the surface of said body of water; and

d. suction pipe means, having an open inlet, pivotally mounted on said transverse axis and in said container



means adjustably above said bottom whereby said increased rate of flow of collected liquid through said constriction keeps said open inlet free of solids and stoppage thereby, and for the controlled discharge of said collected liquid therefrom to vary buoyancy relative to said weight of said second flotation means and thereby resubmerge said one end wall and recommence collection of surface liquid, and so on to continuously and rockably skim the surface of said body of water.

3,849,309

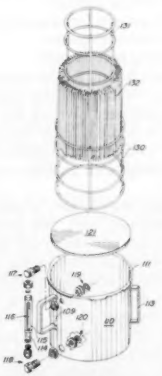
FOOD FRYER WITH CONTINUOUSLY FILTERED COOKING OIL

Wolford A. Morris, 1508 S. Lincoln, Springfield, Ill. 62708

Division of Ser. No. 207,243, Dec. 13, 1971, Pat. No. 3,797,378, which is a continuation-in-part of Ser. No. 30,650, April 22, 1970, Pat. No. 3,648,595. This application Aug. 20, 1973, Ser. No. 389,975

Int. Cl. B01d *27/08*, *35/14*

U.S. Cl. 210—143 **6 Claims**



1. An oil filtering arrangement for continuously filtering cooking oil comprising a pair of concentric open frame sup-

port cylinders having an independent cylinder of filter paper freely positioned between and replaceably supported by them, the filter paper being made from mercerized wood pulp fiber saturated by a melamine-formaldehyde resin, which is in the order of 20–40 percent by weight.

3,849,310

METHOD AND APPARATUS FOR SEPARATING PARTICLES FROM A LIQUID

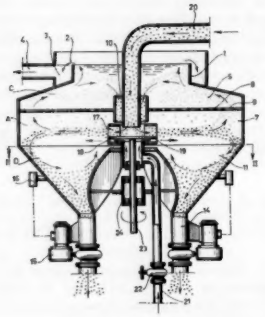
Elie Condolios, Grenoble, France, and Uilke Van Essen, Gorinchem, Netherlands, assignors to N.V. Technical Maatschappij Bergmann, Berkel en Roodenrijs, Netherlands and Societe Grenobloise D'Etudes et D'Applications Hydrauliques (Sogreah), both of Grenoble-Gare, Netherlands

Filed Jan. 12, 1972, Ser. No. 217,106

Claims priority, application France, Jan. 14, 1971, 71.01869; Mar. 25, 1971, 71.11405

Int. Cl. B01d *21/26*

U.S. Cl. 210—196 **9 Claims**



1. An apparatus for separating particles from a liquid, comprising a basin which from top to bottom is composed of four parts provided on top of one another;

a cylindrical upper front part forming an overflow edge and surrounded by a discharge gutter;

a downwardly diverging second part;

a cylindrical third part having a cylindrical section which is greater in diameter than that of said upper part, in which a screen is accommodated dividing the third part into a portion over and a portion under the screen, the solids being able to pass through perforations of the screen, the latter having openings with enlarged diameter along its periphery, and

a lower part composed of a plurality of funnels, each funnel constituting a collecting tank and having a discharge outlet for particles separated from said liquid: at least one conduit being provided for introducing the mixture to be treated, said conduit vertically extending towards the center of the third part in a zone lying below the screen and to a certain distance above a horizontal deflector, means associated with the discharge end of said at least one conduit for discharging the mixture into the basin centrifugally along a horizontal plane, while further at least one passage is provided for the discharge of the fraction, sedimented at the lower end of each outlet funnel.

3,849,311

DEVICE FOR REMOVING OIL AND THE LIKE FROM WATER CONTAMINATED BY OIL OR THE LIKE

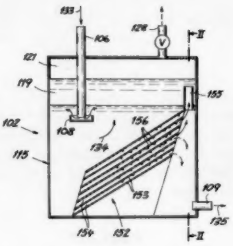
Peter Jakubek, Brunn am Gebirge, Austria, assignor to Fa. International Pollution Control Systems, Inc., Washington, D.C.

Filed Dec. 1, 1972, Ser. No. 311,264

Claims priority, application Austria, Dec. 1, 1971, 10355/71

Int. Cl. B01d *19/00*

U.S. Cl. 210—188 **8 Claims**



1. An apparatus for removing oil or the like from water which is contaminated with oil or the like, particularly from ship bilges, comprising

a bilge pump controlled by a float switch,

an air separator and an oil separator operatively communicating with each other,

a pump means for pumping water contaminated with oil via said air separator through said oil separator,

said oil separator comprising at least one collecting tank for the removed oil, and at least one coarse separator and at least one fine separator, the latter including foam,

said coarse separator communicating with said collecting tank by a shutoff member, and including an insert provided within said coarse separator and separating an inlet portion thereof from an outlet portion thereof comprising at least one flow channel extending obliquely upwardly in the direction of flow.

3,849,312

FILTER BED ASSEMBLY FOR CLEANSING COOKING OILS AND THE LIKE

Walter A. Wecker, Sr., Deerfield, Ill., assignor to Wacker-Dearborn Corporation, Chicago, Ill.

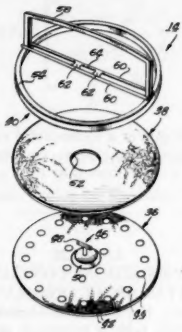
Filed Nov. 6, 1972, Ser. No. 303,975

Int. Cl. B01d *25/14*

U.S. Cl. 210—237 **6 Claims**

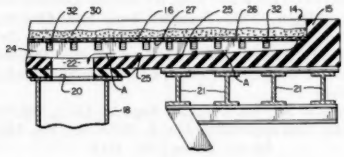
1. A filter bed assembly comprising: base plate means adapted to be disposed adjacent the floor of a filtration vessel and including an upright, centrally disposed connection member and a perforate filter plate rigidly affixed to said connection member; a filter element having a central aperture sized to admit said connection member therethrough; joining and lifting means including a frame arranged for mechanically securing edge portions of said filter element in sealing position adjacent said filter plate, a connection element spanning said frame at the central portion thereof with opposite end portions of said connection element connected to the peripheral edge of said frame whereby clamping pressure applied to the central region of said connection element is transmitted to the opposite ends thereof where connected to said frame, said connection element further having coupling means for releasably engaging said connection member, and handle means

upstanding from said frame, said filter element being situatable between said base plate and said frame and one of said connection member and said coupling means including transverse arm means and the other of said connection member



and said coupling means including aperture means sized to pass said transverse arm means in one position of relative rotation for assembly and disassembly and to capture said transverse arm means in a different position of relative rotation for manipulating the filter bed assembly.

3,849,313
BELT FOR A VACUUM FILTER
Edwin B. Lopker, Fort Lauderdale, Fla., assignor to Pullman Incorporated, Houston, Tex.
Filed Nov. 30, 1972, Ser. No. 310,996
Int. Cl. B01d *33/04*
U.S. Cl. 210—400 **24 Claims**



1. A filter belt for a continuous belt vacuum filter, said belt having a series of ribs having horizontal top surfaces which provide a substantially horizontal, flat surface on the filtration portion of said belt, said ribs being positioned along the surface of said belt and spaced one from the other to define therebetween a series of drainage channels having a floor

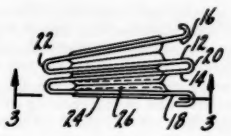
a series of perforations through said belt, said perforations being in liquid flow communication with the floor of said drainage channels, and

the floor of said drainage channels being sloped downwardly from said horizontal top surfaces towards said perforations.

3,849,314
FILTER MEDIA INSERTS
Forest G. Niccum, Wood Dale, and Peter Heinrich, Jr., Chicago, both of Ill., assignors to Marvel Engineering Company, Chicago, Ill.
Filed June 21, 1973, Ser. No. 372,218
Int. Cl. B01d *27/06*
U.S. Cl. 210—493 **1 Claim**

1. A cylindrical filter member formed by a pleated filter element having a series of spaced pleat walls, and means integral with each wall of said pleated filter element for maintaining uniform pleat spacing including projections extending from opposite sides of each pleat wall, adjacent pleat wall projections extending from opposite sides of each pleat wall, projections from opposing walls being in contact with one another, each of said pleat wall projections having a length substantially greater than its width, with contacting pleat wall projections forming an angle on the order of about 90° with each other,

inner and outer folds adjoining adjacent pleat walls, with the



spacing between walls joined by an outer fold being substantially constant over the radial length of the wall, contacting projections between pleat walls joined by an outer fold having generally constant depth and width throughout the length thereof,

the spacing between pleat walls joined by an inner fold gradually increasing from the inner fold toward the outside of the filter, with the depth and width of contacting projections spacing pleat walls joined by an inner fold gradually increasing from the inside of the filter element toward the outside of the filter element.

ERRATUM

For Class 242—33 see:
Patent No. 3,849,319

ERRATUM

For Class 250—325 see:
Patent No. 3,849,286

3,849,315
FILM-FORMING FIRE FIGHTING COMPOSITION
Peter Jordan Chiesa, Jr., Penn Township, Chester County, Pa., assignor to National Foam System, Inc., West Chester, Pa.
Filed May 18, 1972, Ser. No. 254,404
Int. Cl. A62d *1/00*
U.S. Cl. 252—3 **7 Claims**

1. In an aqueous film-forming fire-fighting foamable liquid containing dissolved fluorocarbon and silicone surfactants in amounts that give the liquid a surface tension at least as low as 19 dynes per centimeter but do not give it good foamability and also containing one or more foamability-increasing surfactants that are neither fluorocarbons nor silicones, to bring the foamability of the liquid up to the level needed for a fire-fighting foam, the improvement according to which at least 40 percent of the foamability-increasing surfactants is an imidazoline or amine di-propionate surfactant with hydrophilic and lipophilic moieties of which the hydrophilic moiety has at least three hydrophile units selected from the class consisting of hydroxyl, carboxyl, sulfo and nitrogen, and weighs at least 80 percent more than the lipophilic moiety.

3,849,316

SPACER COMPOSITION

Herman R. Motley, Tulsa; Earl F. Morris, Wagoner, both of Okla., and Joseph P. Pavlich, Houston, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 172,304, Aug. 16, 1971, abandoned. This application June 12, 1973, Ser. No. 369,366

Int. Cl. E21b *21/04*

U.S. Cl. 252—8.5 P 8 Claims

1. A composition comprising, as percent by weight based on the components (*a*), (*b*) and (*c*):

a. a liquid hydrocarbon oil from about 70 to about 97 percent;

b. a water wetting surfactant which functions to maintain water wet solid particulate matter entering into admixture with said composition, water wet, from about 1.5 to about 15 percent;

c. an oil wetting surfactant which functions to maintain oil wet solid particulate matter entering into admixture with said composition, oil wet, about 1.5 to about 15 percent; and

d. an effective amount of a suspending agent, having the property of increasing the ability of the liquid hydrocarbon oil to suspend particulate solids, to increase the suspending ability of the liquid hydrocarbon.

3,849,317

ADDITIVE FOR REDUCING GEL STRENGTH IN AQUEOUS LIME CONTAINING DRILLING FLUIDS

Thad O. Walker, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 18, 1972, Ser. No. 315,955

Int. Cl. E21b *21/04;* C09k *3/00*

U.S. Cl. 252—8.5 A 6 Claims

1. An aqueous drilling fluid having a liquid phase saturated with calcium hydroxide, containing as the additive for reducing gel strength and yield point, hydrolyzed cereal solids which is comprised of from about 15 percent to about 25 percent by weight di-saccharides, tri-saccharides, tetra-saccharides, and penta-saccharides, and from about 75 to about 85 percent by weight hexa-saccharides and above.

3,849,318

LUBRICATING OIL COMPOSITION CONTAINING ANTI-WEAR AGENTS

William R. Miner, Pinole, and Charles K. Parker, Jr., Kensington, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed July 3, 1972, Ser. No. 268,257

Int. Cl. C10m *1/10*

U.S. Cl. 252—18 12 Claims

1. A lubricating oil composition comprising:

a. An oil of lubricating viscosity, and

b. A nitrate of a Group I or Group II metal dispersed in said oil in an amount effective to substantially reduce wear.

3,849,319

DI AND TRI (HYDROCARBYLAMMONIUM) TRITHIOCYANURATE AND LUBRICATING OIL COMPOSITIONS CONTAINING SAME

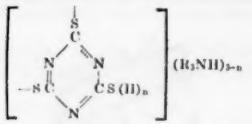
John W. Nebzydoski, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 19, 1973, Ser. No. 417,153

Int. Cl. C10m *1/38, 1/32*

U.S. Cl. 252—33.6 10 Claims

1. A lubricant composition comprising a major portion of base oil having lubricating properties containing from about 0.001 to 0.5 wt. percent of a hydrocarbyl-ammonium trithiocyanurate represented by the formula:



in which R is hydrogen or a hydrocarbyl radical having from about 8 to 24 carbon atoms at least one R being a hydrocarbyl radical and n has a value from 0 to 1.

3,849,320

ORGANIC COMPOSITIONS CONTAINING ALKALI METAL ARYLCARBAMATES

Robert F. Bridger, Hopewell; El-Ahmadi I. Heiba, and Stamoulis Stournas, both of Princeton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 30, 1972, Ser. No. 310,752

Int. Cl. C10m *1/54*

U.S. Cl. 252—33.6 10 Claims

1. A lubricant composition containing, as an antioxidant, a minor amount of a carbamate of the group consisting of alkali metal arylcarbamates, diarylcarbamates and alkarylcarbamates having the structure:

$$R^1R^2NCO_2M$$

in which R^1 and R^2 are alkyl, aryl or hydrogen; at least one of R^1 and R^2 is aryl; and M is selected from the group consisting of Li, Na, K, Rb, Cs or tetraalkyl ammonium.

3,849,321

N-SUBSTITUTED FATTY ACID AMIDE LUBRICANTS

Frank C. Magne, 2223 Franklin Ave., New Orleans, La. 70117; Robert R. Mod, 4600 San Marco Rd., New Orleans, La. 70129; Gene Sumrell, 134 Wren St., New Orleans, La. 70124, and Winfred E. Parker, 420 W. Upsal, Philadelphia, Pa. 19119

Division of Ser. No. 176,734, Aug. 31, 1971, Pat. No. 3,746,644. This application Apr. 6, 1973, Ser. No. 348,801

Int. Cl. C10m *1/46, 1/48*

U.S. Cl. 252—46.7 2 Claims

1. A composition of matter useful as a lubricant and having antiwear and extreme pressure lubricating properties, said composition comprising paraffin oil and 5 to 10 weight percent of N,N-dibutyl-[9(10)-hydroxy-(9)10-dibutylphosphato]stearamide.

3,849,322

ALKYLATED TERTIARY AMINES AS HIGH-TEMPERATURE ANTIOXIDANTS FOR ESTER BASE LUBRICANTS

Kenneth T. Wendler, Freehold, and David A. Daniels, Kendall Park, both of N.J., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 362,693, May 22, 1973, abandoned, which is a continuation of Ser. No. 152,405, June 11, 1971, abandoned. This application July 16, 1973, Ser. No. 379,823

Int. Cl. C10m *1/34*

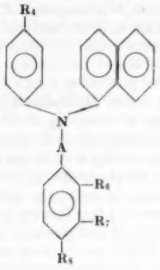
U.S. Cl. 252—49.9 40 Claims

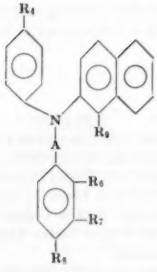
1. In a lubricant composition comprising major amounts of a carboxylic acid ester lubricant, the improvement comprising the presence of,

a. a secondary amine having the formula;

in which R_1 and R_2 are separately alkyl groups having 4–12 carbon atoms; and

b. a tertiary amine having the formula;





in which R_4 is an alkyl group having 4–12 carbon atoms and R_6, R_7, and R_8 are separately selected from the group consisting of CH_3, C_2H_5, iodine, bromine, chlorine, fluorine, nitro, and hydrogen, A is CCl_2, CBr_2, Cl_2, or an alkylene group having about 1–7 carbon atoms, and R_9 is hydrogen or an alkyl group having 4–12 carbon atoms, said secondary amine and said tertiary amine being present in an amount effective for improving oxidative stability of the ester base lubricant at temperatures up to at least 400°F.

3,849,323

FRICTION-REDUCING PETROLEUM MIXTURES AND METHOD OF MAKING SAME

Clive Hollinshead, Santa Fe Springs, Calif., assignor to Ted Weiner and Gwendolyn Patricia Weiner, both of Lake Tahoe, Nev., part interest to each

Filed Apr. 24, 1972, Ser. No. 246,888

Int. Cl. C10m *1/26, 3/20, 5/12, 7/24*

U.S. Cl. 252—56 R **9 Claims**

1. A product useful as a lubricant or fuel additive which consists essentially of a hydrocarbon lubricant, a wax constituent dispersed in said hydrocarbon lubricant, and an emulsifier in an amount sufficient to maintain said wax constituent uniformly dispersed in said hydrocarbon lubricant, the wax constituent being selected from the group consisting of candellila, carnuba, Chinese, jojoba, beetle, myrtle, and sugar cane waxes, beeswax, a synthetic version of one of the foregoing natural waxes, and mixtures of the aforesaid waxes, and said wax constituent being present in an amount ranging from not more than one up to 10 parts of wax per 120 parts of the hydrocarbon.

3,849,324

FUNCTIONAL FLUIDS

Martin B. Sheratte, Reseda, Calif., assignor to Douglas McDonnell Corporation, Santa Monica, Calif.

Filed Mar. 29, 1971, Ser. No. 129,269

Int. Cl. C09k *3/00*

U.S. Cl. 252—78 **7 Claims**

1. A functional fluid composition consisting essentially of, by weight, (a) about 35 to about 85 percent of a phosphate ester in the form of a trialkyl phosphate containing alkyl groups of from about 3 to about 10 carbon atoms, and (b) about 15 to about 65 percent of a diester compound selected from the group consisting of adipic and sebacic acid alkyl diesters, having alkyl groups containing from about 4 to about 12 carbon atoms.

3,849,325

ALKALINE BRIGHT ZINC ELECTROPLATING

Marcis M. Kampe, Cleveland Heights, Ohio, assignor to Enthone, Incorporated, West Haven, Conn.

Division of Ser. No. 13,791, Feb. 24, 1970, Pat. No. 3,655,534.

This application Jan. 6, 1972, Ser. No. 215,920

Int. Cl. C23b *5/46;* **C07d** *51/62*

U.S. Cl. 252—79.1 **4 Claims**

1. A composition comprising the reaction product of a nitrogen-containing heterocyclic compound with a primary amine, formaldehyde, and an epihalohydrin wherein the halogen atom is chloro or bromo or a glycerol chlorohydrin and a liquid diluant therefor.

3,849,326

SOLID WASHING COMPOSITIONS

Brian George Jaggers, Romford; Keith Frederick Ufton, Ilford, and Horst Richard Wagner, Ongar, all of England, assignors to Bush Boake Allen Limited, London, England

Filed June 29, 1971, Ser. No. 158,049

Claims priority, application Great Britain, July 1, 1970, 31863/70

Int. Cl. C11d *3/50*

U.S. Cl. 252—89 **18 Claims**

1. Solid perfumed washing compositions consisting essentially of at least one washing adjuvant selected from the group consisting of solid soaps, sodium carbonate, sodium sesquicarbonate, sodium perborate, sodium phosphate, sodium chloride, ammonium carbonate, borax, sodium hexametaphosphate, sodium tripolyphospate, sodium nitrilotriacetate, sodium metasilicate and sodium pyrophosphate, and as a perfumery component at least one compound selected from the group consisting of oligomeric compounds of the formula

$$A_3M\left(O\underset{|}{M}A_2\right)_nA,$$

wherein n is an integer, M is titanium or zirconium and the groups A are the same or different organic groups at least one of which has the formula (-OR), wherein R is the residue of a perfumery alcohol or phenol, said compound having been prepared by hydrolysis of a monomeric titanate or zirconate ester of formula MA_4 with from 50 to 90 moles of water per

100 moles of said monomeric ester, said perfumery component being in an amount between 0.02 and 15 percent of said composition.

3,849,327

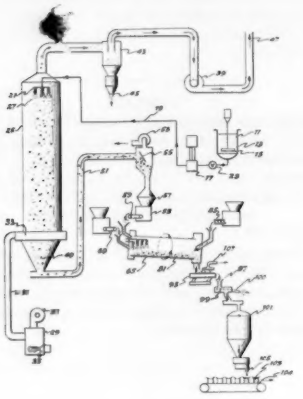
MANUFACTURE OF FREE-FLOWING PARTICULATE HEAVY DUTY SYNTHETIC DETERGENT COMPOSITION CONTAINING NONIONIC DETERGENT AND ANTI-REDEPOSITION AGENT

Walter A. DiSalvo, North Arlington; Frank R. Smith, Jr., North Plainfield, and Edward J. Kenney, Bernardsville, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. Nos. 124,111, March 15, 1971, , and Ser. No. 134,324, April 15, 1971, , and Ser. No. 203,365, Nov. 30, 1971,. This application Feb. 9, 1972, Ser. No. 224,694

Int. Cl. C11d *3/065, 11/02*

U.S. Cl. 252—109 **10 Claims**



1. A method of manufacturing a spray-dried free-flowing, particulate heavy duty synthetic organic detergent composition which comprises preparing by spray-drying a particulate intermediate composition which contains a detergent builder salt selected from the group consisting of alkali metal tripolyphosphates, alkali metal pyrophosphates, alkali metal carbonates, alkali metal silicates and alkali metal nitrilotriacetates, and mixtures thereof, and which contains less than 0.5 percent by weight of synthetic organic anti-redeposition agent, and mixing said intermediate composition with from 0.1 to 5 percent by weight of a synthetic organic anti-redeposition agent in powder form, which agent is selected from the group consisting of carboxymethyl cellulose, polyvinyl alcohol, methyl cellulose, hydroxypropyl methyl cellulose, polyvinyl pyrrolidone and polymeric acrylamide and mixtures thereof, and additionally admixing thereto from 1 to 10 percent by weight of a nonionic surface active compound or mixture thereof in liquid state, which nonionic compound contains lipophilic and hydrophilic moieties in blaance so that the compounds are water soluble and have dissolving, solubilizing and emulsifying effects on lipophilic soil, which nonionic surface active compound contains from 10 to 24 carbon atoms in the lipophilic moiety thereof and four to 100 lower alkoxy groups, wherein the lower alkoxy is of two to three carbon atoms, to produce a free-flowing, particulate, detergent composition having soil anti-redeposition properties.

3,849,328

PROCESS AND COMPOSITION FOR INHIBITING SCALE DEPOSITION

Vernon H. Schievelbein, and Thomas E. Sample, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1972, Ser. No. 250,183

Int. Cl. C02b *5/06*

U.S. Cl. 252—180 **3 Claims**

1. A method for inhibiting the formation of mineral scale upon a substrate surface in contact with scale prone waters which comprises

dissolving sulfonated alkali lignins in the scale prone waters in an amount from about 0.0005 percent to about 0.01 percent by weight.

3,849,329

METHOD FOR PRODUCING FUELED MODERATOR

John B. Cahoon, Jr., Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 1, 1959, Ser. No. 843,900

Int. Cl. G21c *3/02, 21/00*

U.S. Cl. 252—301.1 R **1 Claim**

1. In a method for producing a high density fueled beryllia compact thermally stable at temperatures above 1,500° C, comprising the steps of dissolving about 4 percent by weight uranium chloride in ethyl alcohol, slurring an intermediate grade purity beryllia having a mean particle size of less than 10 microns in said ethyl alcohol solution, evaporating said solution at room temperature by the application of a vacuum pressure thereto, whereby free flowing powders are produced, compacting a quantity of said powders isostatically at a pressure greater than 20,000 psi, heating said compact in a furnace through which air is freely circulating for a period of at least 10 hours and to a maximum temperature of at least 1,000° F, and thereafter sintering said compact for at least 1 hour in hydrogen at a temperature at least as high as 1,500° C.

3,849,330

CONTINUOUS PROCESS FOR IMMOBILIZING RADIONUCLIDES, INCLUDING CESIUM AND RUTHENIUM FISSION PRODUCTS

Raymond E. Isaacson, and Lloyd E. Brownell, both of Richland, Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 22, 1972, Ser. No. 308,917

Int. Cl. G21c *19/42*

U.S. Cl. 252—301.1 W **5 Claims**

1. A continuous process for immobilizing cesium - and ruthenium - containing radionuclide wastes as a complex metalo-silicate product which is virtually insoluble and nonleachable in alkaline or neutral environments comprising the steps of:

a. passing a solid premix consisting of (1) a metal oxidizer selected from the group consisting of oxides, nitrates, nitrites, sulfates, sulfites, carbonates or mixtures thereof, (2) an inert material selected from crushed basalt or sand, and (3) a metal fuel selected from the group consisting of aluminum, silicon, magnesium, zirconium, titanium or alloys thereof, said metal fuel having a concentration based on weight of reaction material which is subcritical to continuous ignition reaction, and said radionuclide wastes as a nitrate salt or a calcined oxide into a reactor;

b. adding additional metal fuel to said reactor whereby a complex metalo-silicate melt is formed by an exothermic reaction;

c. contacting condensate off gases from said reaction with a mixture selected from the group consisting of sodium aluminate and sodium silicate or sodium hydroxide and

clays at a temperature of 90°C and atmospheric pressure to immobilize cesium sublimates as cesium aluminosilicates;

d. recycling said cesium aluminosilicate to said reactor as part of said premix;

e. removing ruthenium fission products as reduced ruthenium metal from said complex metalo-silicate melt; and

f. charging said complex metalo-silicate melt into a container for storage.

3,849,331

4-NAPHTHALIMIDO CYCLOAMMONIUM-ACRYLIC FIBER COMPOSITIONS

Georges Raymond Henry Mingasson, Paris, and Annick Marthe Suzanne Simone Domergue, Eaubonne, both of France, assignors to Ugine Kuhlmann, Paris, France

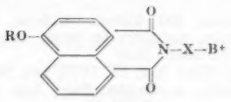
Division of Ser. No. 751,349, Aug. 9, 1968, Pat. No. 3,649,633. This application Dec. 1, 1971, Ser. No. 203,918

Claims priority, application France, Aug. 11, 1967, 67.117728

Int. Cl. C09k *1/02*

U.S. Cl. 252—301.2 W **5 Claims**

1. A composition of matter consisting of cations and an acrylic fiber having negative positions, said cations being attached at the negative positions of said fiber, in which the cations have the formula:



in which R is alkyl or monohydroxy or monoalkoxy substituted alkyls or alkoxy group, said alkyl having one to four carbon atoms, X is a carbon-nitrogen linkage or p-phenylene, B^+ is an N^+- (lower alkyl) cycloammonium said cycloammonium being a benzimidazolium, pyrazolium, triazolium or thiazolium group, wherein lower alkyl is methyl or ethyl, said cycloammonium group attached to X through a carbon atom, B^+ being unsubstituted on the remaining carbon atoms or substituted on said carbon atoms by up to four substituents selected from the group consisting of chlorine, methyl, ethyl, phenyl or methylthio.

3,849,332

SEQUENTIAL CARBONIZATION AND ACTIVATION OF FIBROUS MATERIAL IN A CARBON DIOXIDE ATMOSPHERE

Alan Bailey; Frederick Arthur Pomroy Maggs, both of Salisbury, and John Herbert Williams, Wilton, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

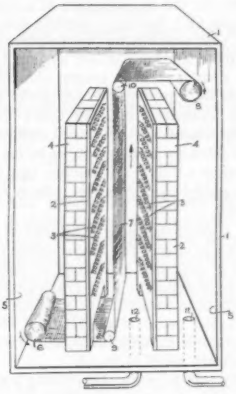
Continuation-in-part of Ser. No. 1,561, Jan. 8, 1970, abandoned. This application Feb. 15, 1972, Ser. No. 226,481

Claims priority, application Great Britain, Jan. 8, 1969, 1150/69

Int. Cl. C01b *31/08*

U.S. Cl. 252—422 **15 Claims**

1. A process for the manufacture of highly activated fibrous carbon comprising passing a body of a fibrous organic material in a continuous length upwardly past at least one heating element thereby subjecting the said fibrous material to a heating program comprising firstly a carbonizing stage to carbonize the organic fibrous material and subsequently an activating stage to activate the carbonized fibrous material and throughout both stages of said heating program exposing the fibrous material to an upward stream of a purging gas to remove volatile decomposition products and activate the carbonized fibrous material, said purging gas being selected from the group consisting of carbon dioxide, mixtures of carbon dioxide with ammonia, mixtures of carbon dioxide with up to 50 percent (V/V) of at least one inert gas and mixtures of carbon



dioxide with at least one hydrogen halide; wherein the rate of upward passage of said fibrous organic material relative to the heating element gives a residence time of at least 15 minutes in the critical temperature range of between 40° and 80°C around the temperature at which the material starts to decompose and lose weight most rapidly during the carbonization process; and wherein the convective gas flow upwardly between said fibrous organic material and said heating element is reinforced by a supply of said purge gas to give a total relative gas flow rate over the surface of the material between 10 and 250 cm./minute.

3,849,333

SEMI-CONDUCTING POLYMER SYSTEM COMPRISING A COPOLYMER OF ETHYLENE-ETHYLARCRALATE OR VINYL ACETATE, ETHYLENE-PROPYLENE-TERMONOMER AND CARBON BLACK

Keith Andrew Lloyd, Plainfield, and Eugene Jay Fisher, Brunswick, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sept. 26, 1972, Ser. No. 292,338

Int. Cl. H01b *1/04;* **C09b** *1/48*

U.S. Cl. 252—511 **5 Claims**

1. A semi-conducting composition of:

i. a copolymer of ethylene and ethyl acrylate or vinyl acetate comonomer having a comonomer content of 2 to 5 weight per cent,

ii. an ethylene-propylene-termonomer elastomer in an amount of from 3 to 20 weight per cent of said composition, and

iii. a conducting carbon black in an amount of from 25 to 50 weight per cent of said composition.

3,849,334

MANUFACTURE OF PARTICULATE CATALYST COMPOSITIONS FOR THE POLYMERIZATION OF OLEFINS

Hans Frielingsdorf, Bad Duerkheim, Heinz Mueller-Tamm, Ludwigshafen, Lothar Hoehr, Buerstadt, and Erich Kolk, Bad Duerkheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Dec. 5, 1972, Ser. No. 312,283
Claims priority, application Germany, Dec. 13, 1971, P 21 61 771.0
Int. Cl. B01j *11/84*
U.S. Cl. 252—429 B 1 Claim

1. A process for the manufacture of a particulate catalyst composition (K) having a particle diameter of from 0.1 to 5 mm. and suitable for the polymerization of olefins, comprising a Ziegler catalyst system (Z) embedded in a wax, the Ziegler catalyst system consisting of:

(1) *a* grams of a particulate, inorganic carrier having a particle diameter of from 0.001 to 2 mm. and containing chemically combined metals, and

(2) from 0.001*a* to 0.1*a* grams, in terms of the transition metal in catalyst component (2.1), of a Ziegler catalyst applied to said carrier, which Ziegler catalyst consists of:

(2.1) *b* gram-moles of a catalyst component consisting of a chloride, oxychloride or alkoxychloride of titanium, zirconium or vanadium, and

(2.2) from 0.01*b* to 100*b* gram-moles of a catalyst component consisting of a saturated metal alkyl, saturated metal alkoxyalkyl or saturated metal alkylhalide of aluminum, magnesium or zinc or a lithium alkyl,

wherein an intimate mixture (G) having a temperature of from 40° to 120° C. and consisting of *c* grams of the Ziegler catalyst system (Z) and 1*c* to 100*c* grams of a melt of a wax having a melting point above 30° C. is converted to the particulate catalyst composition (K) by comminution of said mixture (G), in which 1 part by weight of said intimate mixture (G) having a temperature of from 40° C. to 120° C. is passed, at a rate of from 0.0001 to 0.01 part by weight per second, into from 0.2 to 25 parts by volume, said parts by weight relating to said parts by volume as do kilograms to liters, of a liquefied inert gas having a temperature of from −30° to −200° C. and in motion at a Reynolds number of from 3.4×10^3 to 5×10^4, whereupon the resulting particulate catalyst composition (K) is separated from the inert gas.

3,849,335

ABRASION-RESISTANT CATALYST CONTAINING BORIC ACID SUITABLE FOR THE REARRANGEMENT OF KETOXIMES

Otto Immel, Krefeld-Uerdingen, and Hans-Helmut Schwarz, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Oct. 9, 1969, Ser. No. 865,194, now abandoned. Divided and this application Apr. 5, 1971, Ser. No. 131,496
Claims priority, application Germany, Oct. 12, 1968, P 18 02 887.0
Int. Cl. C07d *41/04*
U.S. Cl. 252—432 6 Claims

1. Abrasion-resistant catalysts containing boric acid and boron nitride suitable for the preparation of lactams by the rearrangement of cyclic ketoximes containing 5 to 12 carbon atoms in the ring in the gaseous phase at a temperature of 200° C. to 400° C., obtained by heating at a temperature of 250° to 900° C., (A) a mixture of boric acid and a supporting material in a weight ratio of boric acid: supporting material of 1:4 to 3:2; and (B) 1–30% by weight based on (A) of a nitrogen-containing compound which forms boron nitride with boric acid or boron trioxide, selected from the group consisting of NH_4OH, $(NH_4)_2CO_3$, NH_4Cl, urea, guanidine and thiourea.

3,849,336

PALLADIUM COMPOSITIONS SUITABLE AS OXIDATION CATALYSTS

William G. Lloyd and Donald R. Rowe, Bowling Green, Ky., assignors to Larox Research Corporation, Bowling Green, Ky.

Original application Feb. 7, 1972, Ser. No. 223,970, now Patent No. 3,790,662. Divided and this application Sept. 20, 1973, Ser. No. 399,359
Int. Cl. B01j *11/82, 11/78*
U.S. Cl. 252—438 10 Claims

1. An aqueous homogeneous solution consisting essentially of

(a) a water-soluble palladium (II) salt, said salt being selected from the group consisting of a chloride, bromide, nitrate, sulfate, and Li_2PdCl_4, having a concentration of metal ion of at least about 0.00005 to about 0.025 mole per liter,

(b) a copper (II) chloride or bromide,

(c) a copper (II) salt selected from the group consisting of a nitrate, sulfate, alkylsulfonate, arylsulfonate, tetrafluoroborate, perchlorate, trifluoroacetate, trichloroacetate and methanephosphonate, and

(d) the balance water,

wherein the total concentration of (b) and (c) is from about 0.003 to about 3 moles per liter, and wherein the copper (II) chloride or bromide (b) comprises from about 10 to about 80 mole percent of the total of (b) and (c).

3,849,337

PROCESS FOR THE PREPARATION OF OXIDATION CATALYSTS AND CATALYSTS OBTAINED THEREBY

Giovanni Manara and Vittorio Fattore, San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., San Donato Milanese, Italy

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,440
Claims priority, application Italy, Apr. 23, 1971, 23,548/71
Int. Cl. B01j *11/06, 11/08, 11/22*
U.S. Cl. 252—439 7 Claims

1. A process for the preparation of oxidation catalyst based on oxides of antimony and of a second metal selected from the group consisting of iron, uranium, tin, cerium, manganese and thorium said process comprising (i) providing a powdered catalytic mass by heating compounds of the said metals which are thermally decomposable to the metal oxides, (ii) drying the finely powdered catalytic mass; (iii) adding a compound, volatile at temperatures lower than the catalyst activation temperature, and selected from the group consisting of ammonium carbonate, ammonium bicarbonate, urea, hexamethylenetetramine and oxalic acid, (iv) molding the catalyst preparation to shape, (v) heating the shaped catalyst until said volatile compound is completely eliminated and (vi) then calcining to obtain the oxides of the said metals.

3,849,338

CATALYST SUPPORT AND OXYCHLORINATION CATALYST EMBODYING SAME

Jean-Claude Daumas, 8 Square des Villebenettes, 78 Marly-le-Roi, France, and Madeleine Le Page, 5 Square du Mont-Blanc, 75 Paris 15e, France

No Drawing. Filed Feb. 16, 1972, Ser. No. 226,929
Claims priority, application France, Mar. 19, 1971, 7105677
Int. Cl. B01j *11/78*
U.S. Cl. 252—441 13 Claims

1. A process for the preparation of an oxychlorination catalyst comprising the steps of forming a silica-magnesia support by forming a silica hydrogel with a compound selected from the group consisting of magnesium chloride, magnesium bromide, magnesium perchlorate and mixtures thereof, calcining the resulting hydrogel at a temperature

of 530 to 700° C. to form the support, with the compound being employed in an amount sufficient to provide a hydrogel containing 10 to 25% magnesia based on the calcined particles, and depositing on the support a copper chloride catalyst.

3,849,339

METHOD OF PREPARING AN IMPROVED DEHYDROGENATION CATALYST

Robert R. Turley, Lake Jackson, William M. Castor, Clute, and Kenneth R. Nunnally, Brazoria, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 53,881, July 10, 1970, now Patent No. 3,703,593. This application Sept. 14, 1972, Ser. No. 288,915

The term of this patent subsequent to Nov. 21, 1989 has been disclaimed

Int. Cl. B01j *11/22*

U.S. Cl. 252—455 R 5 Claims

1. In a process for preparing a catalyst for the dehydrogenation of alkyl aromatic hydrocarbons to vinyl aromatic hydrocarbons by preparing a paste consisting essentially of Fe_2O_3, Cr_2O_3 or an alkali metal chromate or dichromate decomposible to Cr_2O_3, an alkali metal oxide or an alkali metal salt decomposible to an alkali metal oxide, a binder and sufficient water to form said paste, forming said paste into pellets and calcining said pellets into a finished catalyst, the improvement which comprises employing as the Fe_2O_3 component a mixture of hydrated Fe_2O_3 and anhydrous Fe_2O_3 wherein the hydrated Fe_2O_3 is present in the range of from about 79 percent to about 95 percent of the total weight of iron oxides present.

3,849,340

HYDROCARBON CONVERSION CATALYST

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Application Nov. 10, 1971, Ser. No. 197,375, now Patent No. 3,763,260, dated Oct. 2, 1973, which is a continuation-in-part of abandoned application Ser. No. 20,125, Mar. 16, 1970. Divided and this application Dec. 29, 1972, Ser. No. 319,440

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 Z 6 Claims

1. A catalyst composition comprising a zeolite component having a mordenite crystal structure and having a silica to alumina mole ratio of at least 40:1 prepared by acid extracting alumina from an initial mordenite composition having a silica to alumina mole ratio of about 12:1 to about 30:1 and metal component selected from the group consisting of copper, silver, gold and zirconium.

3,849,341

ESTER-LINKED DERIVATIVES OF CARBOHYDRATES AS BUILDERS FOR DETERGENT COMPOSITIONS

Vincent Lamberti, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 77,052, Sept. 30, 1970. This application Feb. 1, 1972, Ser. No. 222,659

Int. Cl. C08b *19/04, 3/12;* C11d *3/22*

U.S. Cl. 252—546 19 Claims

1. A detergent composition comprising:

(a) at least one detergent surface active agent selected from the group consisting of anionic, nonionic, zwitterionic and ampholytic agents;

(b) an organic biodegradable detergent builder comprising a water soluble salt of an ester-linked carboxyl derivative of a polysaccharide, selected from the group consisting of starch maleate, starch succinate, starch phthalate, starch glutarate, starch citraconate, starch itaconate, starch diglycolate and starch dilactate wherein the D.S. value ranges from about 0.5–3 and wherein said builder represents from about 20% to about 60% of the total weight of the detergent composition and the weight ratio of builder to surfactant is from about 1:10 to about 50:1.

3,849,342

CATALYSTS FOR CONVERSION OF NITROGEN OXIDE POLLUTANTS IN AUTOMOTIVE EXHAUST GASES

Teuvo Santala, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 29, 1972, Ser. No. 310,623

Int. Cl. B01j *11/22*

U.S. Cl. 252—462 3 Claims

1. An improved catalyst for reducing nitrogen oxides in automotive exhaust gasses, said catalyst comprising a metal alloy having a composition, by weight, of from about 25 to 75 percent nickel, from about 0.5 to 20 percent of a metal catalyst selected from the group consisting of vanadium, lanthanum and didymium, and the balance copper and impurities.

3,849,343

METHOD OF CATALYST MANUFACTURE

James Hoekstra, Evergreen Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Feb. 5, 1973, Ser. No. 329,956

Int. Cl. B01j *11/08*

U.S. Cl. 252—466 PT 11 Claims

1. In the preparation of a catalytic composite wherein a porous refractory carrier material is impregnated with a solution of a compound of a platinum group metal and a solution of a compound of an alkaline earth metal selected from the group consisting of calcium, strontium and barium, the improvement which comprises:

(a) impregnating a porous refractory carrier material with a solution of a compound of at least one platinum group metal;

(b) prior to calcining the impregnated carrier material, further impregnating the same with a compound of said alkaline earth metal in solution with a reducing agent; and

(c) thereafter drying and calcining the resultant composite.

3,849,344

SOLID DIFFUSION SOURCES CONTAINING PHOSPHORUS AND SILICON

Carl H. McMurtry, Lewiston, and Yorihiro Murata, North Tonawanda, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 31, 1972, Ser. No. 239,897

Int. Cl. B32b *5/04;* H01b *1/04*

U.S. Cl. 252—500 3 Claims

1. A solid phosphorus containing source body for semiconductor diffusion doping treatment, said body comprising about 5 to about 70 wt. percent of compounds of phosphorus and silicon and the balance silicon containing additives, wherein the compounds of phosphorus and silicon are selected from the group consisting of compositions of $SiO_2 \cdot P_2O_5$, $2SiO_2 \cdot P_2O_5$, and $SiO_2 \cdot 2P_2O_5$, and the sili-

con containing additives are selected from the group consisting of silicon nitride, silicon oxide and silicon metal.

3,849,345

CONDUCTIVE ARTICLES MADE FROM BUTADIENE/STYRENE BLOCK COPOLYMERS AND CARBON BLACK

Kenneth E. Snavely, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed June 27, 1973, Ser. No. 375,798
Int. Cl. C08c *11/18*; H01b *1/06*
U.S. Cl. 252—511 **4 Claims**

1. An antistatic shoe sole stock having a resistivity in the range of 10^3 to 10^8 ohm-cm. prepared from a vulcanizable composition consisting essentially of a block copolymer having the formula

$$A-B$$

wherein A is an essentially homopolymer block formed from a monovinyl aromatic hydrocarbon having 8 to 15 carbon atoms and B is selected from the group consisting of an essentially homopolymer block formed from a conjugated diene having 4 to 8 carbon atoms and a copolymer block formed from a conjugated diene having 4 to 8 carbon atoms and a monovinyl aromatic hydrocarbon having 8 to 15 carbon atoms, the monovinyl aromatic hydrocarbon homopolymer content being from 10 to 40 percent by weight of the block copolymer and about 20 parts by weight of a normally nonconductive carbon black per 100 parts by weight of said block copolymer.

3,849,346

PROCESS FOR PREPARING GRANULAR DETERGENT COMPOSITION

Hideaki Kuwamura, Chiba, Ichiro Kashiwa, Kokubungi, Takashi Hirabayashi, Chiba, and Tadayoshi Tamura, Yachiyo, Japan, assignors to Lion Fat and Oil Company Limited, Tokyo, Japan

No Drawing. Filed June 8, 1972, Ser. No. 260,743
Claims priority, application Japan, June 30, 1971, 46/48,354
Int. Cl. C11d *3/065, 11/02*
U.S. Cl. 252—531 **2 Claims**

1. A process for preparing a granular detergent composition which comprises spray drying a slurry of 70–40% by weight of a mixture of 10–40% by weight of an anionic surface active agent selected from the group consisting of sodium alkylaryl sulfonate (C_8–C_{18}), sodium olefin sulfonate (C_8–C_{20}), sodium alkyl sulfonate (C_8–C_{20}), sodium alkyl sulfate (C_8–C_{20}) and mixtures thereof, 15–40% by weight of sodium tripolyphosphate, 15–40% by weight of sodium silicate having an Na_2O to SiO_2 ratio of 0.5–3, 0.5–10% by weight of magnesium sulfate in 30–60% by weight of water.

3,849,347

COMPOSITION FOR PRE-WASHING TREATMENT OF TEXTILES

Fumikatsu Tokiwa and Tetsuya Imamura, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed June 5, 1972, Ser. No. 259,473
Claims priority, application Japan, June 9, 1971, 46/40,833
Int. Cl. C11d *1/22, 1/831*
U.S. Cl. 252—545 **7 Claims**

1. A transparent gel, liquid crystal, detergent composition consisting essentially of

(1) from about 8 weight percent to about 30 weight percent of straight chain or branched chain alkylbenzenesulfonate detergent selected from the group consisting of the alkali metal salts, monoethanola mine salts and diethanolamine salts of alkylbenzenesulfonates in which the alkyl groups have from 8 to 18 carbon atoms and mixtures thereof,

(2) from about 10 weight percent to about 62 weight percent of amphiphilic polyoxyethylene nonionic surfactant having an HLB value in the range of from 5 to 11 and selected from the group consisting of (a) polyoxyethylene alkyl ethers having alkyl groups of 8–22 carbon atoms and 1–8 oxyethylene units and (b) polyoxyethylene alkylphenyl ethers having alkyl group of 8–18 carbon atoms and 1–8 oxyethylene groups, and

(3) the balance is water,

the sum of ingredients (1) plus (2) being in the range of from about 25 weight percent to 70 weight percent of the total composition.

3,849,348

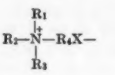
DETERGENT COMPOSITIONS

Gordon Trent Hewitt, Upper Montclair, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 816,027, Apr. 14, 1969. This application Mar. 20, 1972, Ser. No. 236,521
Int. Cl. C11d *1/62, 1/835, 3/26*
U.S. Cl. 252—547 **1 Claim**

1. A foaming aqueous detergent composition effective in simultaneously cleansing and conditioning in a single operation consisting essentially of

(a) 13% to 20% by weight of a compound of the formula



wherein

R_1 is a C_{10} to C_{18} alkyl or $RCONH(CH_2)_3$ where R is a higher alkyl radical;

R_2 and R_3 are each C_1 to C_3 alkyl;

R_4 is C_1 to C_4 alkylene or hydroxyalkylene;

and X is sulfo or carboxy ion;

(b) 3% to 10% by weight of a mono C_{10} to C_{18} alkyl, di-C_1 to C_3 alkyl or hydroxy C_1 to C_3 alkyl tertiary amine oxide;

(c) 0.5% to 5% by weight of a C_{10} to C_{20} quaternary nitrogen compound;

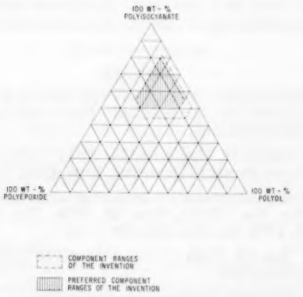
(d) and the balance primarily water, said composition having a pH in the range of 7.5 to 10.

3,849,349

POLYISOCYANURATE FOAM AND PROCESS FOR PRODUCING THE SAME

Kurt C. Frisch, 17986 Parke Lane, Grosse Ile, Mich. 48138, and Kaneyoshi Ashida, 1–3–20 Nichihara-cho, Shibuya-ku, Tokyo, Japan

Filed May 12, 1971, Ser. No. 142,589
The term of this patent subsequent to Feb. 19, 1991, has been disclaimed
Int. Cl. C08g *22/18, 22/46*
U.S. Cl. 260—2.5 AW **23 Claims**


100 WT-% POLYISOCYANATE
100 WT-% POLYEPOXIDE
100 WT-% POLYOL
COMPONENT RANGES OF THE INVENTION
PREFERRED COMPONENT RANGES OF THE INVENTION

1. A modified isocyanurate foam which is a product of a one-stage reaction in the presence of a blowing agent

and an isocyanate trimerization catalyst from the reactants consisting essentially of

(1) a polynuclear polyisocyanate having an isocyanate equivalent weight of from 120 to 160,

(2) a polyepoxide in a proportion of from 0.1 to 0.6 equivalents per equivalent of said polyisocyanate,

(3) a polyol in a proportion of from 0.15 to 0.4 equivalents per equivalent of said polyisocyanate, wherein weight ratios of said polyisocyanate, said polyepoxide and said polyol to the total weight of said three reactants are 50 to 80 percent, 5 to 30 percent and 15 to 40 percent respectively.

3,849,350

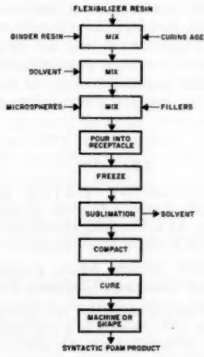
PROCESS OF MAKING LOW DENSITY SYNTACTIC FOAMS

John Matsko, Albuquerque, N. Mex., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed June 6, 1973, Ser. No. 367,680

Int. Cl. C08g *53/08;* **C08j** *1/14*

U.S. Cl. 260—2.5 B **9 Claims**



1. A process for preparing a low binder content and low density syntactic foam product comprising mixing an epoxy binder resin, a flexibilizer resin and a curing agent to form a first mixture comprising from about 5 to about 10 weight percent of the final product, agitating said first mixture, adding sufficient solvent in a proportion of from about 200 milliliters to about 550 milliliters solvent per 100 grams of said final product to said first mixture during said agitation to provide a highly fluid state second mixture, and, while further agitating, adding hollow microspheres to said second mixture, pouring said second mixture with said hollow microspheres into a precooled receptacle to depth not greater than ½ inch, thereafter freezing said second mixture, subliming said solvent from said second mixture while maintaining said frozen condition, said sublimation yielding a dry product, corpressing said dry product at from about 90 to about 200 pounds per square inch and curing said compressed dry product yielding a syntactic foam product having a density of from about 0.202 to about 0.409 grams per cubic centimeter and a hollow microsphere to resin weight ratio of from about 90 to 10 to about 95 to 5.

3,849,351

PAVEMENT MARKING MATERIAL CONTAINING A POLYAMIDE MODIFIED BY A DIPHENOLIC ACID

Jens L. Jorgensen, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation of abandoned application Ser. No. 181,240, Sept. 16, 1971. This application Sept. 13, 1973, Ser. No. 397,160

Int. Cl. C08g *51/04*

U.S. Cl. 260—18 N **7 Claims**

1. Marking material for forming pavement markings that bear traffic within seconds after application comprising

(I) solid thermoplastic-based particles that are nontacky, nonblocking, and free-flowing at normal ambient temperatures but adapted to melt, coalesce, and form a continuous adherent film when applied to a pavement surface at a useful elevated temperature, the particles passing a screen of about 20 mesh, with at least about 80 weight-percent being retained on a screen of about 200 mesh and comprising

(A) an organic thermoplastic phase that

(1) constitutes on the average at least 25 volume-percent of the particles,

(2) melts at a temperature above about 150° F. and forms a low-viscosity fluid melt below about 300° F., and

(3) comprises polyamide condensation products of polycarboxylic acid and polyamine that account for at least 50 volume-percent of the organic phase, at least one weight-percent of the ingredients from which the polyamide condensation products were formed being diphenolic acid; and

(B) a coloring agent in an amount that constitutes at least one volume-percent of the particles; and

(II) particulate material that is nonmelting at the temperature of application, is approximately within the size range of the thermoplastic-based particles, and is present in an amount between about 1 and 50 volume-percent of the whole marking material.

3,849,352

FLAME RETARDANT POLYOLEFIN COMPOSITIONS OF IMPROVED COLOR AND MELT STABILITY

Jerry O. Reed, Mauldin, and James S. Dix, Greenville, S.C., assignors to Phillips Petroleum Company

No Drawing. Filed May 30, 1972, Ser. No. 257,829

Int. Cl. C08f *19/04, 21/04*

U.S. Cl. 260—23 H **5 Claims**

1. A composition which consists essentially of (A) a polyolefin selected from homopolymers and copolymers derived from polymerization of 1-monoolefins having from 2 to 8 carbon atoms, (B) from 0.1 to 20 parts per hundred parts of (A) of a halogenated ether selected from the group consisting of 2,3-dibromopropyl 2,4,6-tribromophenyl ether, 11,12 - dibromododecyl 2,6-dibromo-4-n-octylphenyl ether, 2,4,6-tribromophenyl benzyl ether, 3,4-dibromobutyl phenyl ether, 2,4,6-tribromophenyl cyclyohexyl ether, 2,2-bis[4-(2,3 - dibromopropoxy)phenyl]propane, and 2,2 - bis[4-(2,3-dibromopropoxy)3,5-dibromophenyl]propane, (C) from 0.1 to 2.5 parts per hundred parts of (A) of a solid metal soap mixture containing (1) a polyvalent metal soap of the formula $(RCOO)_2M$ wherein each R is a cyclic or acylic hydrocarbyl radical having from 2 to 22 carbon atoms therein and M is a polyvalent metal selected from the

group consisting of barium, cadmium, lead, strontium, tin and zinc, and (2) a polyvalent metal phenolate of the formula $M(OR')_2$ wherein each R' is an aryl or alkaryl hydrocarbyl radical having from 4 to 18 carbon atoms therein and M is selected from the group consisting of barium, cadmium, lead, strontium, tin and zinc, and (D) from 0.5 to 10 parts per hundred parts of (A) of a metal oxide selected from the oxides of arsenic, antimony and bismuth.

3,849,353

HOT MELT

David D. Taft, Columbus, Ohio, and Terry H. Shepler, St. Paul, Minn., assignors to Ashland Oil, Inc., Ashland, Ky.

No Drawing. Filed Jan. 7, 1972, Ser. No. 216,242

Int. Cl. C09j 3/26

U.S. Cl. 260—27 15 Claims

1. A hot melt composition consisting essentially of:
(1) copolymer of ethylene and unsaturated ester monomer selected from the group consisting of vinyl acetate; alkyl acrylate wherein the alkyl group contains 1–18 carbon atoms; and mixtures thereof; containing from about 40 to about 85% by weight of ethylene and from about 15 to about 60% by weight of unsaturated ester monomer;
(2) atactic polypropylene; and
(3) vulcanized rubber;
said composition based upon the combined weight of (1), (2), and (3) contains from about 5% to about 50% by weight of (1); about 10 to about 85% by weight of (2) and about 10 to about 50% of (3).

3,849,354

CABLE SEALANT COMPOSITION AND METHOD OF SEALING CABLE

Larry A. Strecker and James E. Wood, St. Louis, Mo., assignors to Inmont Corporation, New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 227,956

Int. Cl. C08f 45/52

U.S. Cl. 260—28.5 B 2 Claims

1. A composition of matter comprising a normally non-curing blend of from about:
(a) 5–25% by weight ethylene propylene rubber,
(b) 20–50% by weight of butadiene-acrylonitrile copolymer,
(c) 10–30% atactic polypropylene,
(d) 5–30% polyethylene,
(e) 1–20% of paraffin wax, and
(f) 10–30% liquid paraffinic hydrocarbons.

3,849,355

AGGREGATE COMPOSITION CONTAINING SYNTHETIC THERMOPLASTIC RESIN PELLETS OR FRAGMENTS

Kaoru Yamaguchi and Takashi Saito, Yokohama, Japan, assignors to Nippon Zeon Company, Ltd., Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 168,722, Aug. 3, 1971. This application June 12, 1973, Ser. No. 369,180

Claims priority, application Japan, Aug. 6, 1970, 45/68,324; Oct. 24, 1970, 45/93,169

Int. Cl. C08f 45/04, 45/52

U.S. Cl. 260—28.5 R 7 Claims

1. In a composition useful as a paving material comprising in admixture aggregate and a binder selected from the group consisting of a bituminous material and a petroleum resin, the improvement wherein from 3–75% by weight of said aggregate is replaced with solid synthetic thermoplastic resin particles selected from the group consisting of vinyl chloride resins, polyethylene, polypropylene, polystyrene, acrylonitrile-butadiene-styrene and methacrylic resins in the form of pellets or fragments having a maximum lengthwise diameter of about 1–20 mm. in said admixture.

3,849,356

MIXTURE FOR MAKING A MOLD

Akio Matsui, Funabashi, Yuji Hasegawa, Chiba, and Hiroshi Fujimoto, Funabashi, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Ituka-ku, Kobe-shi, Hyogo-ken, Japan

No Drawing. Continuation of application Ser. No. 221,104, Jan. 26, 1972, which is a continuation-in-part of application Ser. No. 94,599, Dec. 2, 1970, both now abandoned. This application Sept. 11, 1973, Ser. No. 396,315

Claims priority, application Japan, Dec. 5, 1969, 44/98,030

Int. Cl. C08g 51/24

U.S. Cl. 260—29.3 5 Claims

1. In a mixture for making a self-hardening fluid mold comprising a refractory material in powder form, water glass, a hardening agent selected from the group consisting of portland cement, slaked lime, alumina cement or mixtures thereof, surface active agent, about 0.20 to 1.0% by weight of powdered aluminum, and water, the improvement which comprises that the mixture additionally contains about 0.1 to 1.0 part by weight of a novolak phenol resin having a gelation time of from 50 to 80 seconds at 140° C., per 100 parts by weight of the refractory material.

3,849,357

PIGMENTED MASONRY WATER REPELLENT COMPOSITION CONTAINING ALKYLTRIALKOXY SILANE-ALKYL ORTHOSILICATE REACTION PRODUCT SILICONE RESIN

George Robert Wolf, Clinton, Mich., assignor to Stauffer Chemical Company, Westport, Conn.

No Drawing. Continuation-in-part of application Ser. No. 150,208, June 4, 1971, which is a continuation of application Ser. No. 886,001, Dec. 17, 1969, which in turn is a continuation-in-part of application Ser. No. 676,627, Oct. 19, 1967, all now abandoned. This application June 25, 1973, Ser. No. 373,589

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 NR 5 Claims

1. A pigmented water repellent composition consisting essentially of a water-base paint composition containing a pigment, an organic resinous material selected from the class consisting of polymers of acrylic acid, methacrylic acid, alkyl esters of acrylic acid and methacrylic acid, an aqueous solution containing from 20 to 50 percent by weight of a silicone resin based on the total weight of the solution, said silicone resin is obtained from the reaction of from 1 to 3 parts of an alkyltrialkoxysilane having from 1 to 6 carbon atoms in the alkyl group with from 3 to 1 parts of an alkyl orthosilicate having from 1 to 4 carbon atoms in each alkyl group and water in an amount ranging from 0.4 to about 100 times the combined volume of the alkyltrialkoxysilane and the alkyl orthosilicate, and an acid selected from the group consisting of hydrochloric acid, sulfuric acid, ethyl hydrogen phosphite, diethyl hydrogen phosphite and mixtures of diethyl hydrogen phosphite and phosphorous acid in an amount to provide a pH of from 2 to 6, said water repellent composition containing from 2 to 40 percent by weight of the silicone resin based on the weight of said composition.

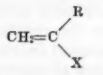
3,849,358

METHOD OF PREPARING HIGHLY CONCENTRATED RESINOUS LATEX

Masakazu Inoue, Takehiko Okamoto, and Ikuo Nagai, Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of abandoned application Ser. No. 160,445, July 7, 1971. This application July 11, 1973, Ser. No. 378,201
Claims priority, application Japan, Oct. 24, 1966, 41/69,759
Int. Cl. C08d *1/09*; C08f *15/40*
U.S. Cl. 260—29.7 UP 6 Claims

1. A method of preparing a highly concentrated resinous latex having a solids content of 50–70% by weight directly by emulsion graft polymerization of ethylenically unsaturated monomers on an elastomeric polymer of conjugated diene type hydrocarbon which comprises adding, either incrementally or continuously in the presence of a free radical generator, an emulsifier and 92–20 parts by weight of monomers selected from the group consisting of monoalkenyl aromatic monomers and mixtures thereof with one or more acrylic monomers of the formula:



wherein R is a member selected from the group consisting of hydrogen and methyl and X is a member selected from the group consisting of —CN and —COOR′, wherein R′ is an alkyl group having 1 to 4 carbon atoms, to 8 to 80 parts by weight calculated as solids portion, of a polymerized conjugated diolefinic hydrocarbon-containing elastomeric, polymer latex, the average particle diameter of the dispersed polymeric particles of which is at least 0.15 micron, said emulsifier being added in an amount corresponding to the amount of said monomers added, as defined by the following formula:

$$9\times10^{-24}\frac{MV_o^{1/3}}{SR_o}V^{2/3}>W+W_o>4\times10^{-24}\frac{MV_o^{1/3}}{SR_o}V^{2/3}$$

wherein W is the number of parts by weight of the emulsifier that is required to be added to the polymerization system per 100 parts by weight of the total charge, when a volume V of polymer and monomers is present in the polymerization system, with the proviso that when W is calculated as zero or a minus number, no emulsifier is added to the polymerization system, W_o is the number of parts by weight, per 100 parts by weight of the total charge, of the amount of emulsifier present in the elastomeric polymer latex, as converted on the basis of the effective molecular area of the emulsifier used in the emulsion polymerization reaction, R_o is the average particle radius (cm.) of the particles of the elastomeric polymer latex, M is the molecular weight of the emulsifier used in the emulsion polymerization reaction, S is the area covered ($cm.^2$) per molecule of the emulsifier used in the emulsion polymerization reaction, the average value of the weight of the several components being used when the emulsifier used is a mixture, V_o is the value obtained by dividing the number of parts of the elastomeric polymer by the specific gravity of the polymer, and V is the value obtained by adding the value V_o to the value obtained by dividing the number of parts by weight of the monomers added to the polymerization system at a certain time during the polymerization by the specific gravity of the polymer which should be formed by the said monomers added until that time, continuing the polymerization at a temperature of 40 to 70° C. and at least in the final stage the polymerization is carried out in an emulsion, the solid content of which is 50 to 70% by weight.

3,849,359

AGENTS FOR THE MANUFACTURE OF ORGANOPOLYSILOXANE COATINGS WHICH REPEL ADHESIVE SUBSTANCES

Siegfried Nitzsche, Heinrich Marwitz, and Friedrich Hockemeyer, Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,945
Claims priority, application Germany, Apr. 20, 1971, P 21 19 120.8
Int. Cl. C08g *47/10, 51/28, 51/32*
U.S. Cl. 260—32.6 R 24 Claims

1. A coating composition having substantially nonadherent properties which comprises (1) a diorganopolysiloxane having Si-bonded hydroxyl groups in the terminal units, (2) from 1 to 20 percent by weight based on the weight of the diorganopolysiloxane (1) of an organopolysiloxane free of amino groups and having Si-bonded hydrogen, (3) from 1 to 20 percent by weight based on the weight of the diorganopolysiloxane (1) of a tin compound, (4) from 1 to 20 percent by weight based on the weight of the diorganopolysiloxane (1) of an aminosubstituted silicon copolymer having units of the formula

$$(CH_3)_mH_xSiO_{\frac{4-m-x}{2}}$$

and aminoorganosiloxane units of the formula

$$R_2'NRSi(R'')_n(OY)_pO_{\frac{3-n-p}{2}}$$

in which the copolymer contains units of the formula

$$(CH_3)_mH_xSiO_{\frac{4-m-x}{2}}$$

in an amount at least equal to but no more than 18 times the weight of the aminoorganosiloxane units, R is a divalent hydrocarbon radical, R′ is selected from the group consisting of hydrogen, alkyl and aminoalkyl radicals, R″ is a monovalent hydrocarbon radical, Y is an alkyl radical having from 1 to 5 carbon atoms, *n* and *p* each have a value of 0 to 2 and the sum of $n+p$ is less than 3, wherein *m* and *x* each have a value of from 0 to 3 with the average value of *m* being 0.9 to 2.5, and from 200 to 5000 percent by weight based on the weight of the diorganopolysiloxane (1) of an inert organic solvent substantially free of water.

3,849,360

POLYUREA-URETHANES PRODUCED FROM A MIXTURE OF TWO POLYAMINES

Basil S. Farah, Elma, and Herbert M. Schroeder, Williamsville, N.Y., assignors to Textron Inc.

No Drawing. Filed Sept. 3, 1970, Ser. No. 69,475
Int. Cl. C08g *22/18*
U.S. Cl. 260—33.2 R 21 Claims

1. A urea-urethane composition of an essentially stoichiometric acount of polyamine with an isocyanate-terminated polyurethane prepolymer of 4,4′ - bis(isocyanatocyclohexyl)methane and polyester polyol, said polyamine consisting essentially of about 20 to 80 weight percent of 4,4′ - bis(aminocyclohexyl)methane and about 20 to 80 weight percent of monocyclic, alicyclic hydrocarbon diamine of 5 to about 16 carbon atoms, 5 to 10 of which form a ring structure.

3,849,361

METHOD OF PREPARING WATER-DISPERSABLE POLYMER COMPOSITIONS

Maurice L. Zweigle, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 10, 1973, Ser. No. 387,411
Int. Cl. C08f *45/34*
U.S. Cl. 260—33.2 R 7 Claims

1. A method for preparing a fluid, water-dispersible suspension of water-soluble or water-swellable vinyl polymer which comprises preparing water-soluble or

water-swellable polymer in the aqueous phase of a microdisperse suspension of aqueous droplets in a liquid hydrocarbon or chlorinated hydrocarbon, separating the water from said suspension by azeotropic distillation while maintaining the polymer in microdisperse suspension, adding a liquid polyglycol or polyglycol ether having a solubility of at least 2 percent by weight in water, said polyglycol or polyglycol ether being employed in a predetermined amount sufficient to maintain the polymer in fluid suspension and recovering the hydrocarbon or chlorinated hydrocarbon by distillation from the suspension.

3,849,362

INCORPORATION OF FILLERS IN INSOLUBLE, INFUSIBLE OXYBENZOYL POLYMERS

James Economy, Eggertsville, and Roger S. Storm, Williamsville, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

No Drawing. Filed Sept. 4, 1973, Ser. No. 393,763
Int. Cl. C08g *51/34*
U.S. Cl. 260—33.2 R **17 Claims**

1. A method of making a filled, insoluble and infusible para-oxybenzoyl polymer which comprises preparing a dispersion of filler and a solution of para-hydroxybenzoic acid and/or polyester-forming derivatives thereof in a compatible high boiling solvent, condensing the para-hydroxybenzoic acid and/or polyester-forming derivative at an elevated temperature to an insoluble and infusible para-oxybenzoyl polymer having the filler incorporated therein and separating insoluble and infusible para-oxybenzoyl polymer having the filler incorporated therein from the high boiling solvent.

3,849,363

PROCESS FOR THE PRODUCTION OF HOMOGENEOUS RUBBER-SILICA MIXTURES

Günter Maass and Frederico Engel, Marl, Kreis Recklinghausen, Paul Bernemann, Haltern im Westfalen, and Harald Blümel, Hamm, near Marl, Kreis Recklinghausen, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Kreis Recklinghausen, Germany

No Drawing. Continuation of application Ser. No. 97,010, Dec. 10, 1970, which is a continuation of application Ser. No. 578,415, Sept. 9, 1966, which in turn is a continuation of application Ser. No. 131,424, Aug. 14, 1961, all now abandoned. This application Oct. 12, 1972, Ser. No. 296,755
Claims priority, application Germany, Aug. 17, 1960, C 22,161; Sept. 9, 1960, C 22,325; Dec. 15, 1960, C 22,964
Int. Cl. C08c *11/10, 11/22*
U.S. Cl. 260—33.6 AQ **4 Claims**

1. Process for the production of a homogeneous rubber-silica mixture by stepwise common precipitation of a synthetic rubber latex consisting of copolymerisates of butadiene and styrene and an alkali metal silicate solution in the presence of a neutral electrolyte with an acid, which consists of mixing a creamable rubber latex emulsion which contains an emulsifier component comprising an emulsifying agent that is stable only in an alkaline medium, with the desired amount of alkali metal silicate solution and such an amount of aqueous neutral electrolyte solution that the concentration of added electrolyte in the resulting cream is between 25 and 80 g./l. and the concentration of rubber is from 50 to 200 grams per liter, and effecting precipitation of homogeneous rubber-silica mixture by stepwise acidification procedure consisting essentially of (a) mixing the resulting cream uniformly with an acid selected from the group consisting of mineral acids and strong organic acids at a temperature between 0 and 30° C. under intensive stirring within 10 to 180 minutes until a pH value between 9 and 7 is attained, the electrolyte concentration being with shorter acid addition times at the upper limit of the above indicated range, (b) heating the reaction mixture for 10 to 120 minutes to 80 to 100° C., then (c) adding additional acid to a pH of 3 to 2 and filtering, washing and drying the resulting mixture.

3,849,364

FINELY DIVIDED CRYSTALLINE POLYMERS OF 1,4-DIHALO-2,3-EPOXYBUTANE

Edwin James Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Jan. 10, 1973, Ser. No. 322,585
Int. Cl. C08c *11/24;* C08f *45/30;* C08g *51/30*
U.S. Cl. 260—33.8 EP **4 Claims**

1. A process for preparing a dispersion of a crystalline polymer of 1,4-diha'o-2,3-epoxybutane in an inert liquid diluent which is a nonsolvent for the polymer, is at least a partial solvent for the epoxybutane and comprises a partially halogenated, aliphatic or cycloaliphatic hydrocarbon, which process comprises agitating a mixture of at least one 1,4-dihalo-2,3-epoxybutane and said diluent with at least a catalytic amount of an organoaluminum catalyst which has been modified by reaction with at least one agent selected from the group consisting of water, boron trifluoride and phosphorus pentafluoride, under polymerization conditions at a temperature below about −30° C. until a polymeric mixture is formed and then continuing to agitate the resulting mixture while maintaining the temperature at below about −30° C. until a dispersion of particles of crystalline polymer having a particle size less than about 100 microns is obtained in said diluent.

3,849,365

METHOD FOR PRODUCTION OF PLASTICIZED THERMOPLASTIC POWDER MIXTURES

Johann Bauer and Walter Popp, Burghausen, Germany, assigaors to Wacker-Chemice GmbH, Munich, Germany

No Drawing. Filed July 31, 1973, Ser. No. 384,211
Claims priority, application Germany, Aug. 2, 1972, P 22 38 029.6
Int. Cl. C08f *45/26, 45/46, 45/50*
U.S. Cl. 260—34.2 **6 Claims**

1. A process for the production of dry thermoplastic powder mixtures, capable of trickling, from suspension polymerized polyvinyl chloride having a plasticizer content of 45% to 60% by weight based upon the finished powdered mixture, comprising initially mixing a powdered suspension polymerized polyvinyl chloride with a first amount of from 40% to 66% by weight of plasticizer, but not more than 30% by weight plasticizer based upon the finished powdered mixture, with high speed agitation, until said plasticizer has been worked into said polyvinyl chloride to produce an initial mixture and a temperature of at least 80° C. is attained; subsequently mixing said initial mixture with a second amount of from 34% to 60% by weight of the plasticizer to produce a subsequent mixture under high speed agitation without application of external heat in such a manner that the temperature does not drop below 80° C. during the period of addition of said second amount of plasticizer; and recovering said dry thermoplastic powder mixture capable of trickling having a plasticizer content of 45% to 60% by weight based upon the finished powdered mixture.

3,849,366

EPOXY RESIN COMPOSITIONS AND PROCESSES FOR PREPARING SAME

Charles T. Patrick, Jr., Centerville, Ohio, assignor to NDM Corporation, Dayton, Ohio

No Drawing. Filed Nov. 22, 1971, Ser. No. 201,212
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 EP **10 Claims**

1. A storage-stable, one-component, rapid curing, thixotropic composition which comprises a liquid polyepoxide component having a viscosity below about 10,000 centipoises, and, based upon 100 parts by weight of liquid

epoxide component, from about 6 to 14 parts by weight dicyandiamide as latent curing agent, from about 0.25 to about 4.0 parts by weight of monuron accelerator, from about 6 to about 15 parts by weight asbestos fibers as thixotroping agent, from about 50 to about 175 parts by weight of a finely-divided, inert, inorganic filler, and from about 0.5 to about 5.0 parts by weight of an alkaline earth metal oxide.

3,849,367

FLEXIBLE POLYESTER BASED SEALING COMPOSITION

James F. Mayer, Hinsdale, and Victor V. Raimondi, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,755
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R **9 Claims**

1. A flexible sealing composition which comprises from 20 to 90 parts by weight of a resin and from 10 to 80 parts by weight of a refractory inorganic oxide filler, said resin comprising from 55 to 95 parts by weight of an unsaturated polyester polymer and from 5 to 45 parts by weight of a hydrocarbon monomer, said cross-linked polyester polymer comprising the condensation product of the following components:

a. An aromatic dicarboxylic acid selected from the group consisting of isophthalic acid, terephthalic acid, and phthalic acid;
b. A saturated aliphatic dicarboxylic acid selected from the group consisting of adipic acid, azaleic acid, and sebacic acid;
c. A long-chained diol selected from the group consisting of triethylene glycol, diethylene glycol, or a mixture of triethylene glycol and diethylene glycol; and
d. An unsaturated aliphatic dicarboxylic acid selected from the group consisting of fumaric acid and maleic anhydride,

wherein said aromatic dicarboxylic acid is employed in the range of 1 to 3 moles per mole of said unsaturated aliphatic dicarboxylic acid, said saturated aliphatic dicarboxylic acid is employed in the range of 4 to 9 moles per mole of said unsaturated aliphatic dicarboxylic acid, and said long-chain glycols are employed in an amount sufficient to give a ½ to 3 mole percent excess over the carboxyl groups present, and wherein said hydrocarbon monomer is selected from the group consisting of a vinylalkenylbenzene, an acrylate, or a mixture of said vinylalkenylbenzene and said acrylate, said mixture containing 1 to 80 weight percent of said acrylate, said flexible sealing composition having a Shore hardness less than 80, and a tensile strength in the range of 100 to 200 p.s.i.

3,849,368

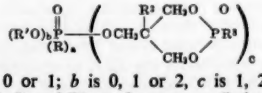
FIRE RETARDANT POLYMERS CONTAINING THERMALLY STABLE CYCLIC PHOSPHONATE ESTERS

James J. Anderson, Metuchen, Vasco G. Camacho, Iselin, and Robert E. Kinney, Lawrenceville, N.J., assignors to Mobil Oil Corporation

No Drawing. Original application Nov. 15, 1971, Ser. No. 199,022, now Patent No. 3,789,091. Divided and this application Aug. 17, 1973, Ser. No. 389,285
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.8 R **7 Claims**

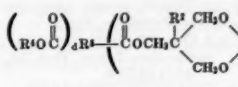
1. A polymer composition containing a flame retardant amount of at least one compound set forth by the formulae:

(A)



where *a* is 0 or 1; *b* is 0, 1 or 2, *c* is 1, 2, or 3 and *a*+*b*+*c* is 3; R and R′ are the same or dissimilar and are alkyl (C_1–C_8), phenyl, halophenyl, hydroxyphenyl, tolyl, xylyl, benzyl, phenethyl, hydroxyethyl, phenoxyethyl, or dibromophenoxymethyl; R^2 is alkyl (C_1–C_4); and R^3 is lower alkyl (C_1–C_4) or hydroxyalkyl (C_1–C_4) and

(B)



where *d* is 0, 1 or 2; *e* is 1, 2 or 3; R^2 is alkyl (C_1–C_4); R^3 is lower alkyl (C_1–C_4) or hydroxyalkyl (C_1–C_4); R^4 is alkyl (C_1–C_4) phenyl, halophenyl, hydroxyphenyl, hydroxyethyl, phenoxyethyl, dibromophenoxyethyl, tolyl, xylyl, benzyl, or phenethyl; and R^5 is monovalent alkyl (C_1–C_8), chlorophenyl, bromophenyl, dibromophenyl, tribromophenyl, hydroxyphenyl, naphthyl, tolyl, xylyl, benzyl, or phenethyl; divalent alkylene (C_1–C_8), vinylene, o-phenylene, m-phenylene, p-phenylene, tetrachlorophenylene (o, m, or p), or tetrabromophenylene (o, m, or p); or trivalent phenenyl.

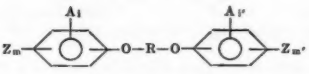
3,849,369

POLYSTYRENE PLASTIC COMPOSITIONS CONTAINING BIS-PHENOXY COMPOUNDS AS FLAME RETARDANTS

Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 260,240, June 6, 1972. This application Feb. 8, 1973, Ser. No. 330,856
The term of this patent subsequent to May 7, 1991, has been disclaimed
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.9 R **14 Claims**

1. A plastic composition containing polystyrene having incorporated therein an effective amount of a flame retardant which is a compound having the formula:



wherein Z is selected from the group consisting of bromine or chlorine; *m* and *m*′ are integers having a value of 1–5; *i* and *i*′ are integers having a value of 0–2; A is selected from the group consisting of cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl and halo-benzyl; and R is selected from the group consisting of

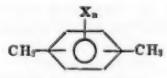
(a) $CH_2-CH(OH)-CH_2$

(b) $CH_2-CH(CH_2OH)-CH_2$

(c) $(CH_2)_x-O-(CH_2)_x$

where x=1-6
where X=H, Cl, Br
n=4

(d)



(e) $CH_2-C(O)-CH_3$

(f)

(g)

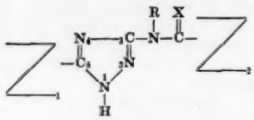
where S=saturated ring

3,849,370
ENHANCEMENT OF RESISTANCE OF OLEFIN POLYMERS TO HEAVY METAL CATALYZED OXIDATIVE DEGRADATION

Motonobu Minagawa, Koshigaya, and Mitsuo Akutsu and Kenichi Nakagawa, Tokyo, Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Filed Dec. 23, 1971, Ser. No. 211,647
Claims priority, application Japan, Dec. 30, 1970, 45/122,270
Int. Cl. C08f *45/58*; C08g *51/58*
U.S. Cl. 260—45.8 N **23 Claims**

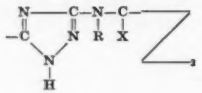
1. A stabilizer combination useful in the enhancement of the resistance of alpha-monoolefin polymers to copper-catalyzed oxidative deterioration, consisting essentially of at least one 3-amido-1,2,4-triazole having the formula:



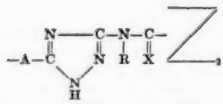
wherein:

(a) R is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms;

(b) Z_1 is selected from the group consisting of hydrogen, alkyl having from one to about eighteen carbon atoms; aryl and alkylaryl having from six to about eighteen carbon atoms; alkylenealkoxy and alkylenearyloxy having from two to about eighteen carbon atoms and nitrogen-containing heterocyclic rings having from four to five ring carbon atoms and one to two ring nitrogen atoms;



and

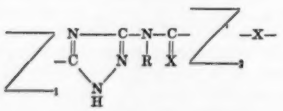


in which A is alkylene having from one to about eight carbon atoms;

(c) X is selected from the group consisting of oxygen and sulfur;

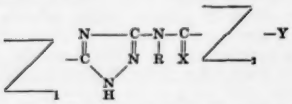
(d) Z_2 is a benzene or naphthalene ring substituted by from one to two R_1 groups and from zero to two R_2 groups; and

(i) R_1 is selected from the group consisting of OH, SH, SR_5 (where R_5 is selected from the group consisting of alkyl and alkylene carboxyalkyl having from one to four carbon atoms), and

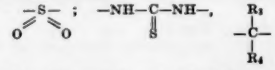


(where X is as in (c) above) and at least one R_1 is in the ortho position);

(ii) R_2 is selected from the group consisting of alkyl, phenyl, alkyl phenyl, alkoxy, acyl, acyloxy, phenoxy and alkyl phenoxy having from one to about eighteen carbon atoms, halogen and amino; and



where Y is selected from the group consisting of oxygen, sulfur,



(where R_3 and R_4 are selected from the group consisting of hydrogen and alkyl having from one to three carbon atoms), provided, that there are at most two 1,2,4-triazole groups in the molecule,

and at least one alpha-monoolefin polymer stabilizer selected from the group consisting of organic phosphites, alkyl-substituted phenols and polynuclear phenols, thiodipropionic acid esters, polyvalent metal salts of organic acids, hydrocarbon sulfides and polysulfides, the stabilizer being compatible with polypropylene and having a low vapor pressure at olefin polymer working temperatures.

3,849,371
THERMALLY STABLE FLAME RETARDANT POLYPROPYLENE COMPOSITIONS

Lionel T. Wolford, Freehold, and John Versnel, Plainsboro, N.J., assignors to Cities Service Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 222,341, Jan. 31, 1972. This application Sept. 7, 1973, Ser. No. 395,202
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.75 B **3 Claims**

1. A self-extinguishing composition comprising (A) a thermoplastic polymer of ethylenically-unsaturated monomers composed of at least 70 mole percent propylene and (B) a flame retardant amount of a mixture of (1) a hexabromocyclododecane having a melting point above 200° C. as indicated by the maximum endotherm determined by differential scanning calorimetry and (2) antimony trioxide, the amount of the hexabromocyclododecane component based on the total weight of the composition being from about 1 to 6 weight percent and the ratio of said component to antimony trioxide varying from about 0.5 to about 5.

3,849,372
VISCOSITY-STABLE CHLOROPRENE SOL POLYMER

Joseph Burton Finlay, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 20, 1972, Ser. No. 299,433
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.95 R **4 Claims**

1. In a process for producing a chloroprene sol polymer having excellent viscosity stability and color stability, in which a chloroprene-containing monomer is polymerized in an alkaline aqueous emulsion containing a dialkyl xanthogen disulfide but substantially no free sulfur to a monomer conversion not exceeding that at which an all-sol polymer is obtained, the improvement which comprises stopping the polymerization before exceeding said maximum conversion, adding 0.05 to 0.6 parts by weight, per 100 parts of polymer, of a phenolic anti-oxidant, and thereafter isolating the sol polymer as a solid, non-emulsified product, the phenolic antioxidant being selected from the group consisting of (a) 2,6-disubstituted phenols in which the substituents are alkyl or cycloalkyl radicals and contain up to 12 carbon atoms and at least one of the alkyl radicals is a tertiary radical, and (b) 2,2'-bis(6-

tert-substituted phenols) in which the substituents are alkyl or cycloalkyl radicals and contain 4 to 12 carbon atoms and the link between the two rings is a covalent bond or a divalent sulfur or aliphatic radical.

3,849,373

POLYMERIC UV STABILIZERS FOR SUBSTANTIALLY HYDROCARBON POLYMERS

John Carl Siegle and Homer Bagenstose Wolfe, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 17, 1972, Ser. No. 254,234
Int. Cl. C08f 27/06, 27/08
U.S. Cl. 260—47 UP 5 Claims

1. Substantially hydrocarbon copolymeric stabilizer consisting of, on a weight basis, greater than 50% polymer repeat units derived from ethylene and less than 50% polymer repeat units derived from a comonomer which is copolymerizable with the ethylene and which contains a reactive basic site, said comonomer having the formula $CH_2=CR^1COOC_nH_{2n}N(R^2)R^3$ wherein n is 2–4, R^1 is H or CH_3 and each of R^2 and R^3 is selected from H and C_{1-4} alkyl, said reactive basic site having ionically bonded thereto a complementary acidic site of an ultraviolet light absorber having an acidic site.

3,849,374

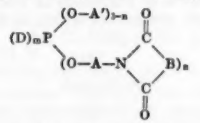
STORAGE STABLE MIXTURES OF BIS OR TRIS IMIDES AND POLYAMINES

Alfred Renner, Munchenstein, and Theobald Haug, Frenkendorf, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed July 20, 1973, Ser. No. 381,327
Claims priority, application Switzerland, Oct. 10, 1972, 14,886/72
Int. Cl. C08g 20/32
U.S. Cl. 260—47 CP 8 Claims

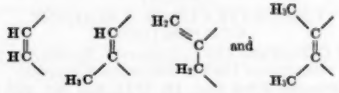
1. A storage-stable, thermosetting composition of matter, which comprises

(a) bis-imides or tris-imides of the general formula I



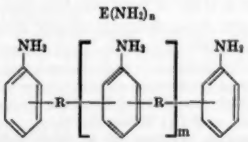
(I)

in which A and A denote aromatic radicals, aromatic radicals which are substituted by alkyl radicals with 1–4 carbon atoms, halogen atoms, the nitro group, the tertiary amino group, the alkoxy group, the carbalkoxy group or the carbamide group, or aromatic radicals which are interrupted by an oxygen atom, an alkylene group or a sulphonyl group, B denotes a radical selected from the formulae consisting of



D denotes an oxygen atom or sulphur atom, m denotes the number 1 or 0 and n denotes the number 2 or 3,

(b) a polyamine of the formula II or III



(III)

wherein, in the formula II, the radical E denotes an n-valent organic radical with 2 to 40 carbon atoms and n represents an integer from 2 to 4, and wherein, in the formula III, the radicals R each denote a divalent hydrocarbon radical of an aldehyde or ketone with 1 to 8 carbon atoms resulting from removal of the oxygen atom and m represents a number from 0.1 to 2, said composition containing 1 to 10 imide groups of the bis-imides or tris-imides of the formula I per primary amino group of the polyamines of the formula II or III.

3,849,375

LATENT CURING EPOXY RESIN-AROMATIC DISULFONAMIDE COMPOSITIONS

Harry A. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 2, 1973, Ser. No. 347,170
Int. Cl. C08g 30/14
U.S. Cl. 260—47 EN 7 Claims

1. A latent curing epoxy resin composition comprising:

(1) an epoxy resin having an average of more than one 1,2-epoxy group per molecule and

(2) an aromatic disulfonamide;

wherein components (1) and (2) are present in quantities so as to provide a sulfonamide hydrogen equivalent: epoxy equivalent ratio of at least about 0.9:1.

3,849,376

AROMATIC POLYAMIDE COMPOSITIONS CONTAINING AROMATIC DISULFIMIDE COMPOUND HAVING AN AFFINITY FOR BASIC DYES

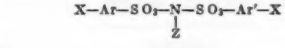
Gerhard Dieter Wolf, Dormagen, Gunter Blankenstein, Stommeln, and Gunther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of application Ser. No. 161,285, July 9, 1971. This application Aug. 7, 1973, Ser. No. 386,272
Claims priority, application Germany, July 11, 1970, P 20 34 477.8
Int. Cl. C08g 20/38, 33/02
U.S. Cl. 260—47 CZ 6 Claims

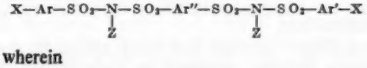
1. A fiber forming polyamide composition consisting essentially of

(1) an aromatic carboxylic polyamide; and

(2) 50 to 500 milliequivalents per kilogram of said composition of a disulphimide having the formula



or



wherein

X is hydrogen or $-SO_3Z$;

Ar, Ar', and Ar'' are carbocyclic aromatic radicals; and

Z is hydrogen or alkali metal.

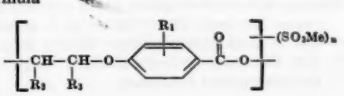
3,849,377

POLYESTER CONTAINING SULPHONIC ACID GROUPS

Günther Boehmke, Opladen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 20, 1973, Ser. No. 399,084
Claims priority, application Germany, Sept. 20, 1972, P 22 46 107.0
Int. Cl. C08g 17/02
U.S. Cl. 260—49 8 Claims

1. Sulphonic acid group containing polyesters, which consist essentially of 5 to 50 recurring structural units of the formula



in which

R_1 is hydrogen, chloro or C_1–C_4-alkyl;

R_2 and R_3 independently of one another are hydrogen or C_1–C_2-alkyl;

Me is hydrogen, alkali metal, alkaline earth metal, ammonium, monoethanolammonium, diethanolammonium, triethanolammonium, cyclohexylammonnium, or benzylammonium; and *n* is a number between 0.2 and 1.2.

3,849,378
UREA FORMALDEHYDE PIGMENT

Darrell J. L. Griffiths, State College, Pa., and Denis K. Huang, Laurel, Md., assignors to Westvaco Corporation, New York N.Y.

No Drawing. Filed Jan. 3, 1973, Ser. No. 320,834

Int. Cl. C08g *9/10, 53/03*

U.S. Cl. 260—69 R **13 Claims**

1. Process for the preparation of a white, bright and opaque precipitated urea formaldehyde pigment in slurry form for use in a papermaking operation which comprises the steps of:

(a) selecting a urea formaldehyde resin that has been reacted at least to its water insoluble stage, said resin having a water tolerance of from about 1.5 to 5.0 and a viscosity of at least about 450 cps. at 50% solids;

(b) precipitating said resin in an aqueous precipitating bath containing from about 0.125 to 1.5% by volume of a strong mineral acid catalyst at a temperature of from about 20–95 degrees C., under agitation, at a resin to water ratio of from 1/16 to 3/8, by adding said resin to the precipitating bath over a period of time ranging from about 15 minutes to one hour to form the precipitated urea formaldehyde pigment; and,

(c) reacting the mixture of resin and precipitating bath for an additional period of time to insure a total reaction time of from about ½ to 5 hours before collecting the precipitated pigment product and homogenizing the product to a particle size of from about 0.1 to 0.5 micron in an agglomerated structure of from about 3 to 6 microns.

3,849,379
PROCESS FOR THE SEMI-CONTINUOUS PREPARATION OF HIGH-MOLECULAR WEIGHT LINEAR POLYESTERS

Lambert Gaston Jeurissen and Frans Antoon De Smedt, Edegem, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed May 8, 1972, Ser. No. 251,167

Claims priority, application Great Britain, May 21, 1971, 16,347/71

Int. Cl. C08g *17/01*

U.S. Cl. 260—75 M **8 Claims**

1. A continuous process for the production of high molecular weight polyesters from terephthalic acid and ethylene glycol, which comprises,

in a first reaction step

adding terephthalic acid and ethylene glycol to bis-(2-hydroxyethyl)terephthalate at a ratio of 1.0 to 1.1 mole of terephthalic acid per mole of bis-(2-hydroxyethyl)terephthalate present and 0.3 to 0.9 mole of ethylene glycol per mole of free terephthalic acid that is being added,

heating the resultant mixture to a temperature between 240 and 310° C. in an inert atmosphere and at atmospheric pressure until a precondensate consisting of low molecular weight esterification product is formed,

separating said precondensate into a first and second half,

in a second reaction step

further polycondensing said first half of said precondensate at a temperature of 260 to 300° C. and at a pressure below 1 mm. of mercury until a high molecular weight linear polyester is obtained,

in a third reaction step

reacting the second half of said precondensate at a temperature above 200° C. with ethylene glycol, the amount of ethylene glycol added in this step being such that when taken together with half the amount of ethylene glycol added in the first reaction step, an amount is obtained that is molecularly equivalent to the amount of free terephthalic acid added in the first reaction step, thereby glycolizing the precondensate to bis(2-hydroxyethyl)terephthalate, and

recycling said bis(2-hydroxyethyl)terephthalate to the first reaction step and continuously repeating said steps.

3,849,380
POLYESTERS

Peter Frederick Jackson and James Angus Wilson Reid, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 15, 1972, Ser. No. 253,104

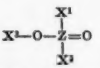
Int. Cl. C08g *17/015*

U.S. Cl. 260—75 R **15 Claims**

1. A process for the production of highly polymeric polymer by the polycondensation of a polycondensable material, at least 85 mol percent of which consists of at least one bis(dihydric alcohol) ester of an aromatic dicarboxylic acid or an oligomer thereof, the polycondensation being effected in the presence, as catalyst, of a mixture of

(a) a metallic component which is a weak acid salt of zinc, manganese or aluminum or zinc oxide and

(b) an organic component which is a compound of the structure



wherein Z is selected from the group consisting of arsenic and phosphorus, x^1 is —R or —OR, x^2 is —R, x^3 is —H or —R, and each R, which may be the same or different, is a saturated aliphatic or aromatic hydrocarbon,

in which process the amount of each component is 0.0001 to 0.05% by weight of the polycondensable material.

3,849,381
CHROMATE CURABLE SEALANT COMPOSITIONS

Richard C. Doss and Leo L. Gingerich, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Dec. 15, 1972, Ser. No. 315,511

Int. Cl. C08g *39/08, 43/00*

U.S. Cl. 260—75 S **7 Claims**

1. A composition curable to a sealant comprising (a) a poly(oxyalkylene) - polyester - poly(monosulfide)-polythiol having an average of more than two mercapto groups per molecule and (b) a chromate selected from the group consisting of ammonium and alkali metal monochromates, dichromates, trichromates and tetrachromates in an amount sufficient to convert at least about 70 percent of the pendent thiol groups to polysulfide groups and thus form a sealant, said (a) being the acidic, unneutralized polymeric reaction product of at least one mercaptoalkanoic acid, at least one thiodialkanoic acid, and at least one poly(oxyalkylene)-polyol having an average of more than two hydroxy groups per molecule.

3,849,382

POLYESTERS FROM 2,6 - NAPHTHALENEDICARBOXYLIC ACID AND TRIS(2-HYDROXYETHYL) ISOCYANURATE

Yasukuni Nakatsuji, Tamaki Kanai, Hiroshi Noda, and Sadayoshi Miura, Sagamihara, and Hideaki Suzuki, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Jan. 16, 1973, Ser. No. 324,085
Int. Cl. C08g *17/08*
U.S. Cl. 260—75 N 4 Claims

1. A coating-forming polyester consisting essentially of units derived from

(A) an aromatic 2,6 - naphthalenedicarboxylic acid component consisting of a member selected from the group consisting of 2,6-naphthalene-dicarboxylic acid and the lower alkyl esters and halides thereof and 0–10 mol percent, based on said member, of other dicarboxylic acids or derivatives thereof selected from the group consisting of the aromatic dibasic acids other than 2,6 - naphthalenedicarboxylic acid, the lower alkyl esters and halides of said aromatic dibasic acids, and the aliphatic dibasic acids and the lower alkyl esters and halides thereof; and

(B) an alcohol component consisting of tris(2-hydroxyethyl)isocyanurate and other di- or trihydric alcohols, the latter polyhydric alcohols being contained in an amount of 0–60 mol percent of the total of said isocyanurate and other polyhydric alcohols; with the proviso that said aromatic 2,6-naphthalenedicarboxylic acid component (A) accounts for 40–50 equivalent percent of the whole polyester.

3,849,383

MOLDING COMPOUNDS FROM HEXAHYDROPHTHALIC ANHYDRIDE, TRIGLYCIDYL ISOCYANURATE AND A POLYOL

Charles A. Fetscher and Paul R. Schweyen, Olean, N.Y., assignors to The Dexter Corporation, Windsor Locks, Conn.

Filed Mar. 5, 1973, Ser. No. 338,191
Int. Cl. C08g *17/04*
U.S. Cl. 260—75 N 35 Claims

1. A clear molding compound which is a reaction product of a polyol selected from the group consisting of glycerol, trimethylol propane, mixtures thereof, and any of the foregoing including up to 25% of the total polyol content of a polyol selected from the group consisting of ethylene glycol, diethylene glycol, propylene glycol, dipropylene glycol, pentaerythritol and propoxylated pentaerythriol, hexahydrophthalic anhydride, up to 25% of which is replaceable with an acid anhydride selected from the group consisting of tetrahydrophthalic anhydride, phthalic anhydride and mixtures thereof, and triglycidyl isocyanurate, the proportions of said polyol, anhydride and isocyanurate being such that there are initially present from 0.25 to 1 hydroxyl from the polyol and 1 to 1.35 glycidyl moieties from the isocyanurate per mol of anhydride and the reaction temperature being in the range of about 70° to about 140° C.

3,849,384

PROCESS FOR PREPARING A POLYMER COMPRISING ACRYLONITRILE, AN AROMATIC OLEFIN AND A TERPENE

Eric Nield, Watton-at-Stone, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 17, 1972, Ser. No. 254,084
Claims priority, application Great Britain, May 17, 1971, 15,266/71
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.78 6 Claims

1. A process for the preparation of a substantially odourless and taste free copolymer of acrylonitrile and aromatic olefin selected from the group consisting of styrene and α-methyl styrene containing 50 to 95% molar of units of acrylonitrile and 5 to 50% molar of units of at least one aromatic olefin randomly distributed in said copolymer, said process comprising polymerising an initial charge containing acrylonitrile, said aromatic olefin, a free radical polymerisation catalyst and at least one alkanethiol, and adding to said initial charge a monomer feed containing said aromatic olefin and at least one terpene consisting of two isoprene units and having at least one ethylenic bond, said monomer feed being at a rate corresponding pro rata to the rate of production of heat in the copolymer formation, and the amount of the alkanethiol in the initial monomer charge being selected to provide copolymer having a reduced viscosity (measured on a 0.5% w./v. solution in dimethyl formamide at 25° C.) between 0.5 and 1.8, and the amount of said terpene added with the monomer feed containing aromatic olefin being selected to maintain subsequent polymer formed within the range of 0.5 and 1.8.

3,849,385

CURABLE OLEFIN COPOLYMERS AND PROCESS FOR PRODUCING THE SAME

Teruo Oshima, Nishinomiya-shi, Tsuneyuki Nagase and Fujio Masuko, Takatsuki-shi, Takeshi Wada, Takasaki-shi, Masaaki Hirooka, Ibaragi-shi, and Isoji Taniguchi, Toyonaka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Sept. 16, 1968, Ser. No. 762,342
Int. Cl. C08f *5/00, 15/40*
U.S. Cl. 260—80.78 11 Claims

1. A process for producing linear, amorphous, solid terpolymers composed of ethylene, propylene and 5-isopropylidene-2-norbornene, which comprises contacting ethylene, propylene and 5 - isopropylidene-2-norbornene in the presence of hydrogen with a catalyst obtained by contacting (1) an organoaluminum halide having the formula: AlR_nX_{3-n}, wherein R is a hydrocarbon residue; X is a halogen atom; and n is an arbitrary number of 1 to 2, with (2) a vanadium compound having a valency of 3 to 5, said organoaluminum halide and vanadium compound being essential constituents of the catalyst.

3,849,386

ONE-PACKAGE MOISTURE ACTIVATABLE POLYSULFIDE SEALANTS

Philip Bernstein, Yardley, and Alan E. Varker, Philadelphia, Pa., assignors to ESB Incorporated

No Drawing. Filed Nov. 5, 1973, Ser. No. 412,672
Int. Cl. C08g *23/00*
U.S. Cl. 260—79.1 5 Claims

1. Moisture activatable polysulfide sealants comprising a curable, liquid polysulfide polymer; a dormant curing agent; an alkaline earth hydroxide and a hydrolizable amine salt of an acid wherein:

(a) the polysulfide polymer is selected from polysulfide polymers having the recurring unit (RSS), wherein R is a divalent organic radical and SS is a disulfide linkage, and mercapto terminated polysulfide polymers having an average molecular weight of from about 2,000 to about 10,000;

(b) the dormant curing agent is incapable alone of curing the polysulfide polymer at room temperature but can effect such cure by exposure to free amine;

(c) the hydrolizable amine salt is a salt of organic or inorganic acid, capable of reacting with moisture in the air to release sufficient free amine to initiate the action of the domant curing agent;

(d) the alkaline earth hydroxide is a weakly basic hydroxide capable of forming a salt with the acid

released from the hydrolizable amine salt of (c) when said amine salt releases free amine upon reaction with moisture in the air; and

(e) the amount of amine salt present is from about 1 to about 10 weight percent based on the total weight of the sealant; the amount of alkaline earth hydroxide present is at least stoichiometrically equal to the amount of amine salt present; and the remainder of the sealant comprises the liquid polysulfide polymer and dormant curing agent, from about 5 to about 25 parts of the curing agent being present for each 100 parts of the polysulfide polymer.

3,849,387

PROCESS OF FORMING POLYOLEFIN FIBERS

Robert W. Fowells, 603 K St., Washougal, Wash. 98671; Robert A. Damon, 1119 SE. 78th Ave. Vancouver, Wash. 98664; and James G. Coma, 200 NW. 78th St. Vancouver, Wash. 98665

Continuation-in-part of abandoned application Ser. No. 27,053, Apr. 9, 1970. This application Mar. 16, 1972, Ser. No. 235,420

Int. Cl. C08f *3/06, 3/10, 15/04*
U.S. Cl. 260—94.9 B **17 Claims**

1. A process of preparing fibers of polyolefins comprising polymerizing an olefin in the presence of a coordination catalyst system in a reaction medium whose solubility parameter is such that $(\delta_s - \delta_p)^2$ is less than about 3.0 cal./cc. and at a temperature less than the melt dissolution temperature of the polyolefin to be formed, and subjecting said polymerization solution to a positive shear stress of greater than about zero pound (force)/square foot up to about 0.1 pound (force)/square foot during polymerization, the magnitude of said shear stress being sufficiently great to precipitate the polyolefin as a fibrous gel having a fibrillar structure of fibrous polyolefin in which the interconnecting capillary spaces are filled with reaction medium, said magnitude of shear stress being less than that amount which would cause the direct formation of a substantial amount of discrete fibers directly recoverable without requiring further processing steps, and subsequently subjecting said fibrous gel formed during polymerization to a shear stress of greater than about 0.1 pound (force)/square foot, thereby producing discrete, directly recoverable, polyolefin fibers without requiring further processing steps.

3,849,388

ANALOGUES OF HUMAN THYROCALCITONIN

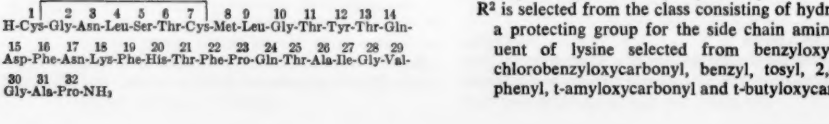
Werner Rittel, Basel, Max Brugger, Birsfelden, Bruno Kamber, Basel, Bernhard Riniker, Frenkendorf, and Peter Sieber, Reinach, Basel-Land, Switzerland, and Hendrik Marie Greven, Heesch, Netherlands, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 864,544, Oct. 7, 1969. This application Sept. 28, 1972, Ser. No. 293,271

Claims priority, application Switzerland Oct. 15, 1968, 15,401/68; Nov. 20, 1968, 17,286/68

Int. Cl. A61k *27/00;* **C07c** *103/52*
U.S. Cl. 260—112.5 **14 Claims**

1. Peptides of the formula I


1 2 3 4 5 6 7 8 9 10 11 12 13 14
H-Cys-Gly-Asn-Leu-Ser-Thr-Cys-Met-Leu-Gly-Thr-Tyr-Thr-Gln-
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
Asp-Phe-Asn-Lys-Phe-His-Thr-Phe-Pro-Gln-Thr-Ala-Ile-Gly-Val-
30 31 32
Gly-Ala-Pro-NH2

in which the aminoacid in position 8 is replaced by valine, norvaline, leucine, isoleucine, norleucine or α-aminobutyric acid, and those which contain glycine in position 12 and those which contain methionine in position 8 and glycine in positions 12 and 18, or at least in position 12, their antiparallel dimer and N^{α}-acyl derivatives wherein acyl is lower monobasic or dibasic alkanoyl, lower alkyloxycarbonyl, benzyloxycarbonyl, L-pyroglutamyl, carbamoyl, N-lower alkylcarbamoyl, N-phenylcarbamoyl, or N-phenylthiocarbamoyl, or desamino[1]-derivatives of the monomeric or dimeric peptides, as well as therapeutically acceptable acid addition salts and complexes with a member selected from the group consisting of zinc phosphate, zinc pyrophosphate, zinc hydroxide, gelatine, polyphloretin phosphate and polyglutamic acid, of the said monomeric or dimeric peptides with the proviso that all aminoacid residues other than glycine are of the L-configuration.

3,849,389

INTERMEDIATES TO THE 5-Phe ANALOG OF LH-RH

James E. Shields, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Oct. 19, 1972, Ser. No. 298,893

Int. Cl. A61k *27/00;* **C07c** *103/52*
U.S. Cl. 260—112.5 **3 Claims**

1. A compound of the formula

$$R_4\text{-L-Trp-L-Ser}(R_2)\text{-L-Phe-Gly}(R)$$

in which R is hydrogen, methyl, ethyl, *p*-nitrobenzyl, or benzyl; R_2 is *t*-butyl or benzyl; and, when R_2 is *t*-butyl, R_4 is H-, CBz-, or $(AdOC)_2$-L-His-; and, when R_2 is benzyl,

R_4 is H-, CBz-, BOC-, AOC-, AdOC-, or $(AdOC)_2$-L-His-.

3,849,390

H-THR-LYS-ARG-OH AND DERIVATIVES THEREOF

William H. McGregor, Chester, and Norman H. Grant, Delaware, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Oct. 29, 1973, Ser. No. 410,584

Int. Cl. A61k *27/00;* **C07c** *103/52*
U.S. Cl. 260—112.5 **10 Claims**

1. A compound selected from those of the formula

L-Thr-L-Lys-L-Arg-OH

and

$$R\text{-Thr}(R^1)\text{-L-Lys}(R^2)\text{-L-Arg}(N^G\text{-}R^3)\text{-}OR^4$$

and the non-toxic acid addition salts thereof; wherein:

R is selected from the class consisting of hydrogen and an α-amino protecting group characterized by not being split off during the coupling of the amino acid residues which form said tripeptide and capable of being split off under reaction conditions which will not result in cleavage of the peptide chain and not give rise to side reactions during the synthesis of said tripeptide;

R^1 is selected from the class consisting of hydrogen or a protecting group for the alcoholic hydroxyl group of threonine selected from acetyl, benzoyl, tert-butyl, trityl, benzyl and benzyloxycarbonyl;

R^2 is selected from the class consisting of hydrogen and a protecting group for the side chain amino substituent of lysine selected from benzyloxycarbonyl, chlorobenzyloxycarbonyl, benzyl, tosyl, 2,4-dinitrophenyl, t-amyloxycarbonyl and t-butyloxycarbonyl;

R^3 is hydrogen and a protecting group on at least one of the N^{δ}, N^{ω} and $N^{\omega'}$ nitrogen atoms of arginine selected from nitro, tosyl, benzyloxycarbonyl, adamantyloxycarbonyl and trityl;

R^4 is selected from the class consisting of hydrogen, C_1–C_6 alkyl, benzyl, phenacyl, 4-picolyl, 4-(methylthio)phenyl, phthalimidomethyl, β-methylthioethyl and substituted benzyl wherein the substituent on said benzyl is at least one member selected from the class consisting of nitro, methoxy and methyl; and at least one of R, R^1, R^2, R^3 and R^4 being other than hydrogen and when said R is an α-amino protecting group, said group not being the same as the protecting group defined by R^1, R^2 and R^3.

3,849,391

RECOVERY OF PROTEIN

Carl T. Egger and Robert E. Olson, Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

No Drawing. Continuation of abandoned application Ser. No. 799,960, Feb. 17, 1969. This application Mar. 12, 1973, Ser. No. 340,181

Int. Cl. A23j *1/14, 1/18*
U.S. Cl. 260—123.5 **7 Claims**

1. A process for recovering protein from a protein-containing source material of vegetable or microbial origin which comprises forming at a pH other than the isoelectric pH of the protein an aqueous slurry of said protein source material, rapidly heating said slurry under pressure to and holding at a temperature in the range from about 250 to 350° F. for a period of not more than six minutes, flash cooling the heated slurry under reduced pressure to accomplish separation of vapor therefrom, and recovering the cooled homogeneous slurry containing protein in solution.

3,849,392

PROCESS FOR THE PRODUCTION OF POLYCONDENSATION PRODUCTS OF AROMATIC DIAZONIUM COMPOUNDS

Hartmut Steppan, Wiesbaden-Dotzheim, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

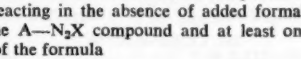
No Drawing. Continuation of abandoned application Ser. No. 826,296, May 20, 1969. This application Feb. 7, 1972, Ser. No. 224,324

Int. Cl. C07c *113/04;* **G03c** *1/54;* **G03f** *1/54*
U.S. Cl. 260—141 **32 Claims**

1. A process for the preparation of a polycondensation product of an aromatic diazonium compound which comprises reacting in the absence of added formaldehyde at least one A—N_2X compound and at least one B_1 compound of the formula

$$E(—CHR_a—OR_b)_m$$

in which A—N_2X is a radical of a compound selected from the group consisting of a compound of the formula



wherein

R_1 is a phenyl or naphthyl group
R'_1 is a phenylene or naphthylene group
R_2 is a phenylene group
R_3 is a single bond or one of the groups

$—(CH_2)_q—NR_4—$
$—O—(CH_2)_r—NR_4—$
$—S—(CH_2)_r—NR_4—$
$—S—CH_2—CO—NR_4—$
$—O—R_5—O—$
$—O—$
$—S—$ or
$—CO—NR_4—$

the left-hand free valence of the specified groups is attached to R_1 and the right-hand free valence is attached to R_2,

wherein

q is a number from 0 to 5
r is a number from 2 to 5
R_4 is selected from the group consisting of hydrogen, alkyl with 1 to 5 carbon atoms, aralkyl with 7 to 12 carbon atoms, and aryl with 6 to 12 carbon atoms,
R_5 is an arylene group having 6 to 12 carbon atoms
Y is one of the groups —NH—, and —O—
X is an anion
p is a number from 1 to 3
E is a radical obtained by splitting off of m H atoms from a compound free of diazonium group selected from the group consisting of aromatic amines, phenols, thiophenols, phenol ethers, aromatic thioethers, aromatic heterocyclic compounds, aromatic hydrocarbons and organic acid amides,
R_a is selected from the group consisting of hydrogen and phenyl,
R_b is selected from the group consisting of hydrogen and alkyl $C_nH_{2n+1}CO—$ wherein n is from 0 to 3 and a phenyl group, and
m is an integer from 1 to 10.

in a strongly acidic condensation medium and under condensation conditions sufficient to produce a polycondensation product of an aromatic diazonium compound containing, on the average, about 0.1 to 50 B_1 units per unit of A—N_2X.

3,849,393

WATER-SOLUBLE AZO DYESTUFFS CONTAINING CATIONIC GROUPS BY COUPLING DIAZONIUM NITROPHENYL COMPOUNDS WITH HOMOPHTHALIMIDES

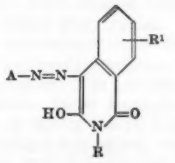
Neville Slater Corby, James Stuart Hunter, and John Lindley Leng, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 17, 1971, Ser. No. 154,201

Claims priority, application Great Britain, July 2, 1970, 32,099/70

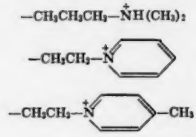
Int. Cl. C09b *29/36;* **D06p** *3/24, 3/76*
U.S. Cl. 260—155 **2 Claims**

1. A water soluble azo dyestuff free from sulphonic acid or from carboxylic acid groups and having the formula

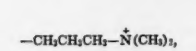


wherein A is ortho-nitrophenyl or orthonitrophenyl substituted wtih a member of the group consisting of nitro, chlorine, bromine, methyl, methoxy, acetyl, cyano, ethyl sulphonyl and trifluoromethyl, R^1 is hydrogen, nitro, hy-

droxy, methoxy, amino or acetamido and R is a protonated group having the formula



or



each of the said groups R being in association with an anion.

3,849,394

MONOAZO PIGMENTS CONTAINING A HYDROXYNAPHTHOYLAMINOACRIDONE RADICAL

Armand Roueche, Neu-Allschwil, Willy Mueller, Riehen, and Rudolf Mory, Dornach, Switzerland, assignors to Ciba Geigy AG, Basel, Switzerland

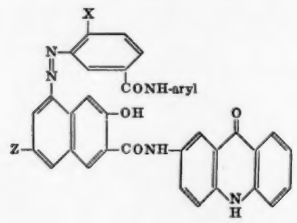
No Drawing. Original application Dec. 24, 1968, Ser. No. 786,727, now Patent No. 3,627,748. Divided and this application Sept. 28, 1971, Ser. No. 184,589

Claims priority, application Switzerland, Jan. 3, 1968, 7/68; Jan. 12, 1968, 505/68; Nov. 13, 1968, 16,920/68

Int. Cl. C09b *29/22*; D06p *1/08, 1/44*

U.S. Cl. 260—155 6 Claims

1. An azo pigment of the formula



wherein X is hydrogen, chlorine, methyl, or methoxy; aryl is phenyl, or phenyl substituted by chlorine, lower alkyl, lower alkoxy or trifluoromethyl; and Z is hydrogen, halogen, lower alkoxy or cyano.

3,849,395

DEGRADED MODIFIED SEAWEED EXTRACTIVE AND COMPOSITIONS CONTAINING SAME AND THEIR PRODUCTION

Arthur L. Moirano, Mountainside, N.J., assignor to Marine Colloids, Inc., Springfield, N.J.

No Drawing. Filed Aug. 25, 1971, Ser. No. 175,006

Int. Cl. C07g *3/00*

U.S. Cl. 260—209 R 8 Claims

1. A degraded modified sulfated hydrocolloid selected from the group consisting of kappa-carrageenan, furcellaran, and iota-carrageenan which consists essentially of glycosidically linked hexose groups in the form of 3,6-anhydro-d-galactose groups and d-galactose groups containing sulfate to the extent of 12% to 35% by weight of said hydrocolloid, said hydrocolloid being characterized in that the ratio of 3,6-anhydro-galactose groups to galactose groups is from 0.8:1 to 1:1 and in that the viscosity in a 1.5% water solution is between 0.4 and 4 centipoises at 75° C.

3,849,396

LINCOMYCIN AND CLINDAMYCIN 1-O-ETHERS

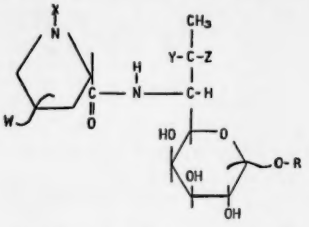
Robert D. Birkenmeyer, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Jan. 8, 1973, Ser. No. 321,957

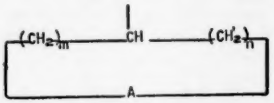
Int. Cl. C08b *19/00*

U.S. Cl. 260—210 R 27 Claims

1. A compound selected from those of formula:



and the acid addition salts thereof, wherein W is selected from hydrogen and lower alkyl; X is selected from hydrogen, lower alkyl and hydroxy-substituted alkyl of from two to four carbon atoms, inclusive; Y is selected from hydrogen and hydroxyl; Z is hydrogen when Y is hydroxyl and when Y is hydrogen Z is selected from hydrogen, chlorine, bromine, and iodine; R is selected from lower alkyl, lower cycloalkyl, lower aryl, lower aralkyl, halo-substituted lower alkyl; halo-, nitro-, and amino-substituted lower aryl; halo-, nitro, amino- and hydroxy-substituted lower aralkyl; and a monovalent moiety of formula:



wherein A represents one of the divalent groups

—S—, and —O—; *m* and *n* are each integers of from 0 to 4, inclusive, and are such that the sum of $m+n$ is from 3 to 4.

3,849,397

3',5'-CYCLIC MONOPHOSPHATE NUCLEOSIDES

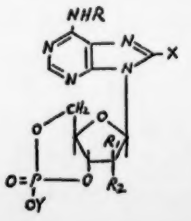
Roland K. Robins and Tasneem A. Khwaja, Santa Ana, Calif., assignors to International Chemical & Nuclear Corporation, Pasadena, Calif.

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,095

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R 18 Claims

1. A compound of the formula:



wherein X is H, a halogen, OH or SH; R is H or a C_1 to C_{10} acyl radical; R_1 is H or OH; R_2 is H or a leaving group selected from the group consisting of tosyl, mesyl, anisyl, brosyl, nisyl, or triisopropylbenzenesulfonyl; and Y is H, an alkali metal or ammonium; provided that when R_1 is OH, R and R_2 are H, and X is H or SH; R is acyl only when X is OH, R_1 is H and R_2 is a leaving group; and X is a halogen only when R and R_1 are H, and R_2 is a leaving group.

3,849,398

ANTIBIOTIC HAVING PARASITICIDAL ACTIVITY

Mamoru Arai, Tatsuo Haneishi, Hisashi Kayamori, Yoo Takiguchi, Noritoshi Kitano, and Susumu Kaneko, Tokyo, Japan, assignors to Sankyo Company Limited

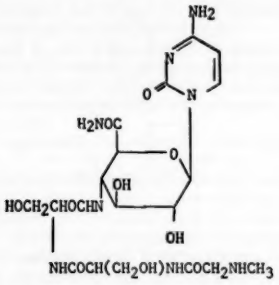
Filed Aug. 2, 1972, Ser. No. 277,588

Claims priority, application Japan, Aug. 3, 1971, 46/58,536

Int. Cl. C07d *51/52*

U.S. Cl. 260—211.5 AB **1 Claim**

1. An antibiotic aspiculamycin having the structural formula



3,849,399

2-SUBSTITUTED-3H-1,4-BENZODIAZEPINES

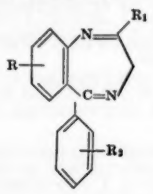
David Coffen, Glenridge, and Rodney Fryer, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 23, 1973, Ser. No. 383,364

Int. Cl. C07d *53/06*

U.S. Cl. 260—239 BD **4 Claims**

1. A compound of the formula



wherein

R is selected from the group consisting of hydrogen, halogen, lower alkyl, trifluoromethyl, nitro, cyano, lower alkoxy and lower alkylthio;

R_1 signifies cyano or carboxamido;

R_2 signifies hydrogen or halogen

and the pharmaceutically acceptable acid addition salts thereof.

3,849,400

2-(SUBSTITUTED ANILINO)-4,5-DIHYDRO-3H-1,3-BENZODIAZEPINES

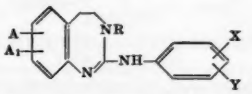
John T. Suh, 3709 W. Scenic Drive, 111 N., Mequon, Wis. 53092, and Richard A. Schnettler, 6234 W. Donges Lane, Brown Deer, Wis. 53223

No Drawing. Filed June 30, 1972, Ser. No. 268,127

Int. Cl. C07d *53/04*

U.S. Cl. 260—239 BD **10 Claims**

1. A compound selected from a compound of the formula



and pharmaceutically acceptable salts thereof, wherein A, A_1, X and Y are selected from hydrogen, hydroxy, halogen, trifluoromethyl, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, and R is hydrogen or lower alkyl of 1 to 4 carbons.

3,849,401

FLUOROALKYL AZIRIDINOPROPIONATES

Giuliana C. Tesoro, Dobbs Ferry, N.Y., and Richard Ring, Woodbridge, N.J., assignors to J. P. Stevens & Co., Inc., Broadway, N.Y.

No Drawing. Original application Mar. 9, 1962, Ser. No. 178,572, now Patent No. 3,575,961, dated Apr. 20, 1971. Divided and this application Apr. 15, 1971, Ser. No. 134,459

Int. Cl. C07d *23/06*

U.S. Cl. 260—239 E **4 Claims**

1. A compound of the formula

wherein

R_1, R_2 and R_3 represent hydrogen or lower alkyl;

R_f is an aliphatic organofluorine-containing radical of the formula

$$CF_3(CF_2)_nCH_2—$$

or

$$HCF_2(CF_2)_nCH_2—$$

n is up to 9.

3,849,402

19-OXYGENATED AND 19-NOR$\Delta^{8(14)}$-STEROID COMPOUNDS

Gunther Kruger, St. Laurent, Quebec, Canada, assignor to Steele Chemicals Co. Ltd., Pointe Claire, Quebec, Canada

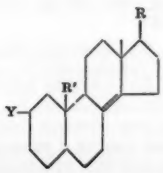
No Drawing. Filed Jan. 5, 1972, Ser. No. 215,669

Claims priority, application Canada, Jan. 6, 1971, 102,448; May 3, 1971, 112,028

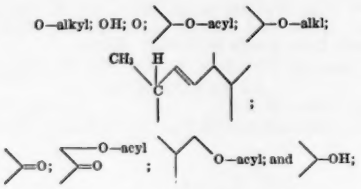
Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **11 Claims**

1. A steroid compound of the formula



wherein R is selected from the group consisting of



wherein alkyl is tetrahydropyranyl or lower alkyl; wherein acyl represents a group selected from those consisting of acetate, lower trialkyl acetates, monohalo acetates and trihalo acetates, wherein Y is selected from the group consisting of O=, HO—, O-alkyl and O-acyl, and wherein R′ is chosen from the group of H, CH_2OH,

$$CH_2—O—CO—NH—C(CH_3)_3,$$

CH_2Oalkyl and CH_2Oacyl, wherein alkyl and acyl are defined as above.

3,849,403

2,3,4,5-TETRAHYDRO-1,1,5,5-TETRASUBSTITUTED-1H-3-BENZAZEPINES

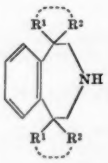
John P. Yardley, King of Prussia, Richard W. Rees, St. Davids, and Herchel Smith, Wayne, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 725,135, Apr. 29, 1968. This application Mar. 29, 1972, Ser. No. 239,394

Int. Cl. C07d *41/08*

U.S. Cl. 260—239 BB **3 Claims**

1. A compound of the formula:



wherein R^1 and R^2, independently, are (lower)alkyl or, taken together, are $—(CH_2)_n—$ wherein n is a whole number of from 2 to 6.

3,849,404

PURIFICATION OF 6,7 - DIHYDRO-17-HYDROXY-3-OXO - 3′H - CYCLOPROPA[6,7] - 17α-PREGNA-4,6-DIENE-21-CARBOXYLIC ACID γ-LACTONES

Joseph F. Zawadzki, Skokie, and Leland J. Chinn, Morton Grove, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Mar. 9, 1973, Ser. No. 339,625

Int. Cl. C07c *167/42, 173/00*

U.S. Cl. 260—239.57 **3 Claims**

1. In a process for separating 6α,7α-dihydro-17-hydroxy-3-oxo - 3′H - cyclopropa[6,7] - 17α - pregna-4,6-diene-21-carboxylic acid γ-lactone and 6β,7β-dihydro-17-hydroxy - 3 - oxo-3′H-cyclopropa[6,7] - 17α - pregna-4,6-diene-21-carboxylic acid γ-lactone from each other, the step which comprises treating a mixture of substantially only the two compounds with hydroquinone in a medium comprising a polar solvent selected from among alkanols, alkyl alkanoates, alkanones, alkanenitriles, water and mixtures thereof in the optional presence of a non-polar solvent selected from optionally-alkylated benzene, alkanes, cycloalkanes, dioxane, and polyhalogenated hydrocarbons, and mixtures thereof to form a sparingly soluble complex of the 6β,7β-dihydro-compound.

3,849,405

THIENO-[2,3-e][1,4]DIAZEPIN-2-ONES

Michio Nakanishi, Oita, and Kazuhiko Araki, Tetsuya Tahara, and Masami Shiroki, Fukuoka, Japan ,assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

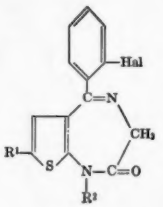
No Drawing. Filed Feb. 17, 1971, Ser. No. 116,240

Claims priority, application Japan, Feb. 17, 1970, 45/14,070; Feb. 23, 1970, 45/15,819; Mar. 7, 1970, 45/19,403; June 25, 1970, 45/56,154; July 31, 1970, 45/67,442

Int. Cl. C07d *53/02, 63/18*

U.S. Cl. 260—239.3 B **5 Claims**

1. Thieno-[2,3-e][1,4]diazepin-2-ones of the formula:



wherein R^1 is a lower alkyl group of from 1 to 2 carbon atoms; R^2 is a member selected from the group consisting of a hydrogen atom and a methyl group; and Hal represents a halogen atom; and the pharmaceutically acceptable acid addition salts thereof.

3,849,406

PYRAZOLINE COMPOUNDS

Horst Aebli, Basel, and Fritz Fleck, Bottmingen, Basel-Land, Switzerland, and Peter Stuart Littlewood, Ilkley, and Alec Victor Mercer, Leeds, England, assignors to Sandoz Ltd., Basel, Switzerland

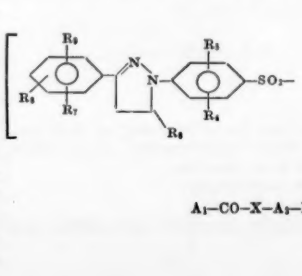
No Drawing. Filed Oct. 2, 1972, Ser. No. 293,931

Claims priority, application Switzerland, Oct. 8, 1971, 14,717/71; June 20 1972, 9,254/72; June 21, 1972, 9,330/72

Int. Cl. C07d *49/10*

U.S. Cl. 260—239.7 **12 Claims**

1. A compound of the formula



wherein

A_1 and A_2, independently, are alkylene of 1 to 3 carbon atoms,

X is —O— or

wherein R_{10} is hydrogen or lower alkyl,

R_1 is hydrogen or substituted or unsubstituted alkyl,

R_2 is substituted or unsubstituted alkyl, cyclohexyl, methylcyclohexyl, or substituted or unsubstituted phenyl, or when X signifies

R_2 and R_{10} together with A_2 and the two attached nitrogens form a piperazine ring,

R_3 is substituted or unsubstituted alkyl, or

R_2 and R_3 together with the nitrogen atom form a piperidine or morpholine ring,

R_4 and R_5 are, independently, hydrogen, halogen, substituted or unsubstituted alkyl, or alkoxy,

R_6 is hydrogen, substituted or unsubstituted alkyl or substituted or unsubstituted phenyl,

R_7, R_8 and R_9 are, independently, hydrogen; halogen; substituted or unsubstituted alkyl, alkylsulphonyl, alkylthio, or phenyl; alkoxy; cyano; carboxylic or sulphonic acid amide or ester; or acylamino;

n is 1 or 2, and

Anion $\ominus$ signifies an equivalent of a non-chromophoric anion

provided that in the foregoing definitions any alkyl moiety contains 1 to 8 carbon atoms unless otherwise specified;

any substituent on substituted alkyl or on the alkyl moiety of alkylthio or alkylsulphonyl is halogen, phenyl, phenoxy, alkoxy of 1 to 4 carbon atoms, hydroxyl or cyano, any substituent on substituted phenyl is methyl, chloro, or methoxy;

any carboxylic or sulphonic acid ester is an alkyl ester wherein the alkyl group contains 1 to 5 carbon atoms; any acyl portion of an acylamino group is alkanoyl of 1 to 8 carbon atoms or alkoxycarbonyl of 2 to 9 carbon atoms; benzoyl; chloro- or methylbenzoyl; phenylsulphonyl, methylphenylsulphonyl; methylsulphonyl; or ethylsulphonyl, and

any halogen is chloro or fluoro.

3,849,407

5-BENZYL PYRIMIDINES INTERMEDIATES

Ronald M. Cresswell, Raleigh, John W. Mentha, Washington, and Russell L. Seaman, Chapel Hill, N.C., assignors to Burroughs Wellcome & Co. (U.S.A.) Inc., Tuckahoe, N.Y.

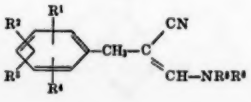
No Drawing. Original application Mar. 4, 1970, Ser. No. 16,606, now Patent No. 3,697,512, dated Oct. 10, 1972. Divided and this application Sept. 8, 1972, Ser. No. 287,463

Claims priority, application Great Britain, Mar. 6, 1969, 11,908/69, 11,909/69; May 16, 1969, 25,171/69; June 13, 1969, 30,247/69

Int. Cl. C07d *29/32*

U.S. Cl. 260—240 R **10 Claims**

1. In the method of preparing a compound of formula I



(I)

where R^1–R^4 are the same or different, and each is a hydrogen or halogen atom, lower alkyl, lower alkoxy or benzyloxy, or R^3 and R^4 taken together may be a methylenedioxy group when both R^1 and R^2 are hydrogen atoms and wherein the β-amino group NR^5R^6 is a primary amino group other than anilino or is a secondary amino group, by combining the corresponding β-alkoxy-α-benzylidenepropionitrile with an excess of the appropriate amine in the presence of a base in an alkanol.

3,849,408

4-SUBSTITUTED-Δ^2-CEPHALOSPORIN DERIVATIVES

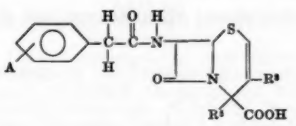
Joseph Edward Dolfini, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 139,861, May 3, 1971. This application Mar. 31, 1972, Ser. No. 240,111

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **4 Claims**

1. A compound having the formula



wherein R^3 is alkyl of 1 to 6 carbons; R^5 is selected from the group consisting of alkyl of 1 to 6 carbons, chloromethyl, dimethylaminomethyl, benzyl, benzyloxymethyl and phenylchloromethyl; and A is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbons, methoxy, halo, nitro, trifluoromethyl, sulfamyl, and diethylamino.

3,849,409

HEXAHYDROTRIAZINE PHOSPHONATE DERIVATIVES

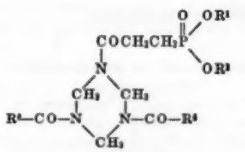
Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 139,222, Apr. 30, 1971, now Patent No. 3,762,865. This application Sept. 7, 1971, Ser. No. 178,417

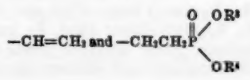
Int. Cl. C07d *55/14*

U.S. Cl. 260—248 NS **17 Claims**

1. A hexahydrotriazine phosphonate derivative corresponding to the structural formula:



wherein R^5 and R^6 are the same or different radicals and are selected from the group consisting of



and wherein R^1, R^2, R^3 and R^4 are the same or different and are radicals selected from the group consisting of alkyl, cycloalkyl, alkenyl, alkylene, carbocyclic aryl, and carbocyclic arylalkyl; said R^1, R^2, R^3 and R^4 radicals having from 1 to about 20 carbon atoms and either unsubstituted or substituted by non-interfering substituents selected from the group consisting of halogen, alkoxy and hydroxy, wherein the terminal valency of any such alkylene radical is linked to the same or another phosphonate molecule conforming to the above formula; and mixtures of said hexahydrotriazine phosphonate derivatives.

3,849,410

PIPERAZINE DERIVATIVES

Michio Nakanishi, Oita, and Takanori Oe and Chiaki Tashiro, Fukuoka, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

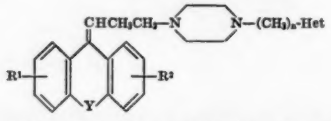
No Drawing. Filed Apr. 10, 1972, Ser. No. 242,770

Claims priority, application Japan, Apr. 10, 1971, 46/22,549

Int. Cl. C09b *23/00*; C07d *51/72*

U.S. Cl. 260—240 TC **8 Claims**

1. An N-substituted piperazine compound of the formula:



wherein Y is $—CH_2—O—$, $—CH_2—S—$, $CH_2—SO_2—$, $—CH_2—CH_2—$, $—CH=CH—$, $—C(CH_3)_2—$, $—O—$ or $—S—$, each of R^1 and R^2 is H, C_{1-4}, alkyl, methoxy, methylthio or halogen, n is 0, 1, 2 or 3 and Het represents 2 furyl, pyridyl or 2 thienyl; and pharmaceutically acceptable acid addition salts thereof.

3,849,411

HYDRAZONES OF PYRAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS

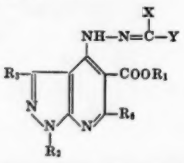
Hans Hoehn, Tegernheim, Germany, and Mark Chasin, Englishtown, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Application Dec. 15, 1971, Ser. No. 208,449, now Patent No. 3,773,777, dated Nov. 20, 1973, which is a continuation-in-part of application Ser. No. 42,415, June 1, 1970, which in turn is a continuation-in-part of application Ser. No. 833,672, June 16, 1969, both now abandoned. Divided and this application June 11, 1973, Ser. No. 368,807

Int. Cl. C07d *31/36*

U.S. Cl. 260—240 G **10 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, lower alkyl or phenyl-lower alkyl, R_2 is hydrogen, lower alkyl or benzyl, R_3 is hydrogen or lower alkyl, R_6 is hydrogen or lower alkyl, X is hydrogen, phenyl or R_7, R_8-phenyl-lower alkyl and Y is R_7, R_8-phenyl or R_7, R_8-phenyl-lower alkyl, R_7 and R_8 each is hydrogen, halogen, lower alkyl or lower alkoxy, and physiologically acceptable acid addition salts thereof.

3,849,412

THIADIAZOLE SUBSTITUTED TRIAZINES

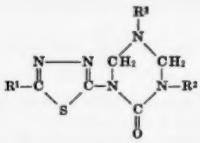
John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 225,616, Feb. 11, 1972. This application May 5, 1972, Ser. No. 250,092

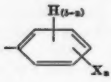
Int. Cl. C07d *55/14*

U.S. Cl. 260—248 NS **5 Claims**

1. A compound of the formula



wherein R^1 and R^2 are each lower alkyl; R^3 is selected from the group consisting of lower alkyl, lower alkenyl, cycloalkyl of from 3 to 7 carbon atoms, lower haloalkyl, and



wherein X is selected from the group consisting of lower alkyl, halogen, trifluoromethyl, nitro, lower alkoxy, lower alkylthio and di(lower alkyl) amino; and n is an integer from 0 to 3.

3,849,413

PROCESS FOR THE MANUFACTURE OF N-(2,4-DIHALOGENO-S-TRIAZIN-6-YL)-UREAS

Rainer Begrich, Basel, and Karl Seltz, Oberwil, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

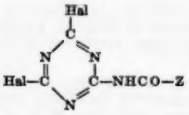
No Drawing. Filed June 8, 1972, Ser. No. 260,878

Claims priority, application Switzerland, June 22, 1971, 9,102/71; Apr. 25, 1972, 6,100/72

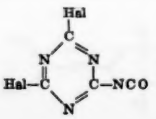
Int. Cl. C07d *55/18*

U.S. Cl. 260—249.5 **4 Claims**

1. A process for the manufacture of a compound of the formula



wherein Hal is a halogen atom and Z is —NRR' wherein R and R' are hydrogen, lower alkyl or lower cycloalkyl, or R and R' taken together with the nitrogen atom to which each is bonded is piperidino, pyrrolidino or morpholino, comprising the step of treating a compound of the formula



with an aqueous solution of an agent of the formula HNRR'.

3,849,414

PROCESS FOR PREPARING 1,5 - DIACETYL - 3,7-ENDOMETHYLENE - 1,3,5,7-TETRAAZACYCLO-OCTANE

Victor I. Siele, Succasunna, and Everett E. Gilbert, Morristown, N.J., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Sept. 17, 1973, Ser. No. 397,525

Int. Cl. C07d *55/14*

U.S. Cl. 260—248 NS 9 Claims

1. A process for preparing 1,5-diacetyl-3,7-endomethylene-1,3,5,7-tetraazacyclooctane which comprises reacting hexamethylenetetramine with ketene in the presence of water.

3,849,415

CHLORO-p-DITHIINO PYRIDAZINE-DICARBONITRILES

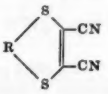
Norman H. Kurihara, Walnut Creek, and Donald E. Bublitz, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Jan. 7, 1971, Ser. No. 104,799, now Patent No. 3,761,475. Divided and this application Feb. 20, 1973, Ser. No. 333,946

Int. Cl. C07d *51/04*

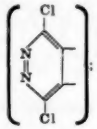
U.S. Cl. 260—250 AC 3 Claims

1. A polycyanodithiino aromatic N-heterocyclic compound corresponding to the formula

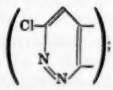


wherein R represents

3,6-dichloro-4,5-pyridazinediyl



6-chloro-3,4-pyridazinediyl



3,849,416

METHOD AND INTERMEDIATES FOR THE PREPARATION OF PYRIMIDINE COMPOUNDS

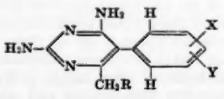
John W. Mentha, Washington, Janice V. Shaffner, Greenville, and Ronald M. Cresswell, Raleigh, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

No Drawing. Continuation-in-part of abandoned application Ser. No. 177,502, Sept. 2, 1971. This application May 24, 1972, Ser. No. 256,339

Int. Cl. C07d *51/42*

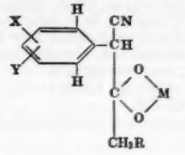
U.S. Cl. 260—256.4 N 5 Claims

1. The method of preparing the compound of formula I



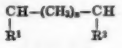
(I)

which comprises reacting a compound of formula II



(II)

with guanidine base, wherein in the above R is alkyl of 1 to 10 carbon atoms or a hydrogen atom, X is halogen atom or nitro, Y is halogen atom or hydrogen atom, and M is



where R^1 and R^2 are the same or different and each are selected from the group consisting of hydrogen, lower alkyl of 1 to 4 carbon atoms, and lower alkyl substituted with hydroxy, halogen or lower alkoxy and $n=0$, 1 or 2.

3,849,417

CERTAIN 2-BENZENESULFONYLAMINO-PYRIMIDINES

Manfred Hübner, Ludwigshafen, Ruth Heerdt, Mannheim-Feudenheim, Felix Helmut Schmidt, Mannheim-Seckenheim, Max Thiel, Mannheim, and Rudi Weyer, Frankfurt-Unterliederbach, Germany, assignors to Boehringer Mannheim G.m.b.H., Postfach, Germany

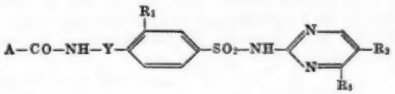
No Drawing. Filed Oct. 11, 1972, Ser. No. 296,744

Claims priority, application Germany, Oct. 20, 1971, P 21 52 230.5

Int. Cl. C07d *99/04, 99/06*

U.S. Cl. 260—256.5 R 10 Claims

1. Sulfonylaminopyrimidine compound of the formula



(I)

wherein

A is an oxygen- or sulfur-containing bicyclic radical of the formula

wherein

X is oxygen or sulfur and B is alkylene of up to 4 carbon atoms or CH=CH; and wherein said radical may be substituted with one or two members of the group consisting of halogen and alkyl and alkoxy having not more than three carbons atoms;

Y is a straight-chained or branched alkylene containing up to 3 carbon atoms;

R_1 is a hydrogen atom or, together with Y, represents an alkylene bridge of from 3 to 4 carbon atoms;

R_2 is straight-chained or branched alkyl, cycloalkyl, cycloalkylalkyl, alkoxy, cycloalkoxy, alkoxyalkyl, alkoxyalkoxy, alkylthio or alkylthioalkyl, phenyl, or benzyl and wherein R_2 contains not more than 10 carbon atoms;

R_3 is a hydrogen atom or lower alkyl of from 1 to 6 carbon atoms; or

R_2 and R_3 together form a bridge of 3 to 5 methylene groups;

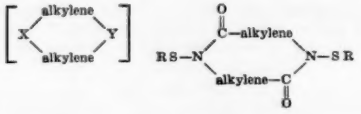
as well as the physiologically compatible salts thereof.

3,849,418
2,5-PIPERAZINEDIONES

Kamel Boustany, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application July 20, 1970, Ser. No. 56,682, now abandoned. Divided and this application June 23, 1972, Ser. No. 265,611
Int. Cl. C07d *51/72*
U.S. Cl. 260—268 DK 10 Claims

1. A piperazinedione or C-alkylated piperazinedione of the formula



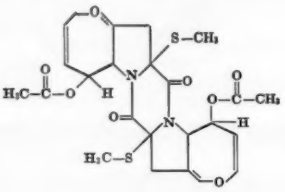
wherein the alkylenes are of 1–6 carbon atoms, and R is alkyl of 1–20 carbon atoms, aralkyl of 7–10 carbon atoms, cycloalkyl of 5–12 carbon atoms, alkaryl of 7–10 carbon atoms, phenyl and naphthyl.

3,849,419
ANTIVIRAL ANTIBIOTIC

Donald C. Delong, David H. Lively, and Norbert Neuss, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Original application Oct. 18, 1967, Ser. No. 676,310, now Patent No. 3,745,158, dated July 10, 1973. Divided and this application Dec. 26, 1972, Ser. No. 318,055
Int. Cl. C07d *95/00, 51/72*
U.S. Cl. 260—268 PC 1 Claim

1. The composition of matter designated as factor I of antibiotic A-21101, said factor I being characterized by the following structural formula:

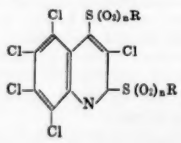


3,849,420
BIS-(ALKYLTHIO- AND ALKYLSULFONYL)-PENTACHLOROQUINOLINES

Yulan C. Tong, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 20, 1972, Ser. No. 299,420
Int. Cl. C07d *33/60*
U.S. Cl. 260—283 S 19 Claims

1. A compound corresponding to the formula:



wherein

n is 0 or 1; and

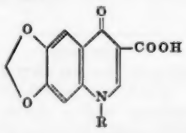
each R represents alkyl of from 1 to 10 carbon atoms, phenyl or cycloalkyl of from 5 to 8 carbon atoms.

3,849,421
PROCESS FOR THE PREPARATION OF COMPOUND HAVING ANTIBACTERIAL ACTION AND INTERMEDIATE THEREFOR

Takenari Nakagome and Hideo Agui, Osaka, and Toru Mitani and Mitsuo Nakashita, Hyogo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,586
Claims priority, application Japan, Jan. 28, 1970, 45/7,895; Feb. 18, 1970, 45/14,355; Feb. 23, 1970, 45/15,721; Feb. 24, 1970, 45/16,004, 45/16,005
Int. Cl. C07d *33/48*
U.S. Cl. 260—287 R 10 Claims

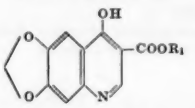
1. A process for the production of a compound represented by the formula:



(VII)

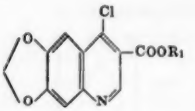
wherein R is a C_1–C_4 alkyl group, which process consists essentially of the sequential steps of:

(a) reacting a compound represented by the formula:



(IV)

wherein R_1 is a C_1–C_4 alkyl group, with phosphorus oxychloride to provide a compound represented by the formula:



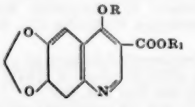
(V)

wherein R_1 is as described above and isolating said compound (V);

(b) reacting the compound (V) so formed in the presence of a base selected from the group consisting of an alkali metal hydroxide, an alkali metal carbonate, a metal salt of an alcohol represented by the formula ROH wherein R is as described above and pyridine with an alcohol represented by the formula:

ROH

wherein R is as described above, to provide a compound represented by the formula (VI):

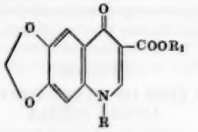


(VI)

wherein R and R_1 are described above and isolating said compound (VI);

(c) heating the compound (VI) in the presence or absence of an alkylating agent or an acid to provide a compound represented by the formula (I), wherein said alkylating agent is an alkyl halide, an alkenyl halide, an alkyl p-toluene sulfonate, a cycloalkyl halide, an hydroxy alkyl halide, a dialkyl sulfate, or triethyloxonium fluoroborate and wherein said acid

is a strong, non-oxidizing inorganic or organic acid or a Lewis acid:



(I)

wherein R and R_1 are as described above and isolating said compound (I) and

(d) then hydrolyzing the compound (I) to provide the compound (VII).

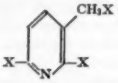
3,849,422

PYRIDINE COMPOUNDS

Claus Weis, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Oct. 10, 1972, Ser. No. 296,430
Claims priority, application Switzerland, Oct. 27, 1971, 15,639/71; Mar. 3, 1972, 3,132/72; Mar. 7, 1972, 3,314/72; Sept. 7, 1972, 13,142/72
Int. Cl. C07d *31/26*
U.S. Cl. 260—290 HL **5 Claims**

1. A compound of the formula



wherein X represents chlorine or bromine.

3,849,423

3-BENZYLPYRIDINES

Eriks V. Krumkalns, Indianapolis, and William A. White, Fountaintown, Ind., assignors to Eli Lilly and Company of Indianapolis, Ltd., Indianapolis, Ind.

No Drawing. Filed Mar. 22, 1971, Ser. No. 126,919
Int. Cl. C07d *31/48*
U.S. Cl. 260—294.8 G **6 Claims**

1. A compound of the formula

wherein

R is phenyl or 4-chlorophenyl;

R_1 is X—R^2;

R^2 is selected from the group consisting of phenyl, 4-chlorophenyl, 3-trifluoromethylsulfonylphenyl, and 4-trifluoromethoxyphenyl;

X is oxygen or sulfur;

and the acid addition salts thereof.

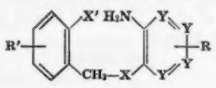
3,849,424

PROCESS FOR PREPARING DIHYDROPYRIDO-BENZOXA (OR THIA)ZEPINES, INTERMEDIATES AND DERIVATIVES

Harry Louis Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Original application Apr. 6, 1970, Ser. No. 26,147, now abandoned. Divided and this application Mar. 6, 1972, Ser. No. 232,283
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 F **8 Claims**

1. A process for preparing compounds of the structure



wherein X is oxygen or sulfur, R and R′ are the same or different and are selected from the group consisting of hydrogen, halogen, lower alkyl, trifluoromethyl or N,N-dimethylaminosulfonyl; X′ is bromine or iodine and one Y is aza and the remainder carbon, which comprises reacting at a temperature of from about 20° C. to about 100° C., in an organic solvent boiling below about 100° C., an aminopyridine compound selected from the group consisting of an aminopyridinol, aminopyridinethiol or an acylated derivative thereof or a sodium derivative thereof, with an o-halobenzyl halide, and, if necessary, saponifying any acyl groups attached to the N atom attached to the pyridine nucleus of the resulting halobenzyloxy (or thio) pyridine, to form an amino-halobenzyloxy (or thio) pyridine of the above structure.

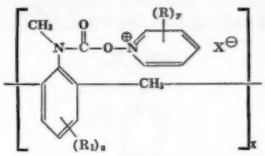
3,849,425

RESINS CONTAINING PYRIDINE N-OXIDE SALTS OF CARBAMOYL HALIDES

Victor A. Pattison, Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,175
Int. Cl. C07d *31/44*
U.S. Cl. 260—295 CA **9 Claims**

1. A composition of matter



wherein R and R_1 are alkyl radicals having from 1 to 6 carbon atoms or aryl radicals having 6 to 10 carbon atoms; X is halogen; x is a number having a value of from 1 to about 10 and y and z are numbers having a value of from 0 to 1.

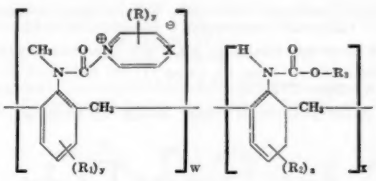
3,849,426

CERTAIN PYRIDINIUM CARBAMOYL COMPOSITIONS

Victor A. Pattison, Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,178
Int. Cl. C07d *31/44*
U.S. Cl. 260—295 CA **8 Claims**

1. A composition having the formula:



wherein R, R_1 and R_2 are alkyl radicals having 1 to 6 carbon atoms or aryl radicals having 6 to 10 carbon atoms; R_3 is a linear alkyl radical having from 5 to 24 carbon atoms; X is halogen; y and z are numbers from 0 to 1; w is a number from about 2 to 10; x is a number from about 0.8 to 4; and the ratio of w to x is from about 12:1 to 1:2.

3,849,427

CERTAIN PYRIDINIUM ANILIDE HALIDE COMPOSITIONS

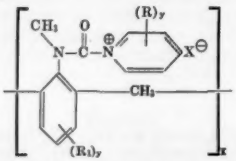
Victor A. Patison, Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,180

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 Q **5 Claims**

1. A process for producing compositions of matter of the formula:



wherein R and R_1 are selected from the group consisting of hydrogen, and an alkyl radical having 1 to 6 carbon atoms or an aryl radical having 6 to 10 carbon atoms; X is halogen, *x* is a number having a value of from about 1 to 10; and *y* is a number having a value of 0 to 1; which comprises

(a) reacting, in essentially stoichiometric amounts, formaldehyde and an N-methyl aniline of the formula

wherein R_1 and *y* are as previously defined,

(b) reacting the product of (a) with phosgene, in the absence of water, and

(c) reacting the product of (b) with a pyridine of the formula

wherein R and *y* are as previously defined.

3,849,428

CERTAIN PYRIDINIUM CARBAMOYLOXY COMPOSITIONS

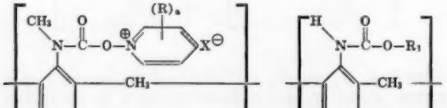
Victor A. Pattison, Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,181

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 CA **10 Claims**

1. A composition of matter having the formula



wherein R, R_1 and R_2 are alkyl having 1 to 6 carbon atoms or aryl having from 6 to 10 carbon atoms; R_3 is an alkyl radical having from 5 to 24 linear carbon atoms; X is halogen; *a*, *b* and *c* are numbers having a value of 0 or 1; *x* is a number having a value of from about 1 to 10 and *y* is a number having a value of from 0.8 to 4.

3,849,429

HALOGENATION OF DIAMINOPYRIDINES IN ACIDIC MEDIA

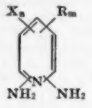
Max M. Boudakian, Pittsford, N.Y., assignor to Olin Corporation

No Drawing. Filed Mar. 30, 1973, Ser. No. 346,379

Int. Cl. C07d *31/42*

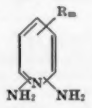
U.S. Cl. 260—296 R **10 Claims**

1. A method of preparing halogenated diaminopyridines and halogenated substituted diaminopyridines of the formula:



wherein X is a halogen selected from the group consisting of chlorine, bromine and iodine; each R is independently selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, nitro halogen, alkoxy of 1 to 4 carbon atoms, and phenyl; *n* is an integer of 1 to 3 and *m* is an integer of 0 to 2

which comprises reacting a compound of the formula:



wherein R and *m* are as defined above;

in the presence of hydrogen peroxide and a hydrohalide acid selected from the group consisting of HCl, HBr, and HI at a temperature of from about 0 to about 70° C.

3,849,430

PROCESS FOR THE PREPARATION OF 3-ISOTHIAZOLONES AND 3-HYDROXYISOTHIAZOLES

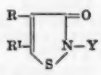
Sheldon N. Lewis, Willow Grove, and George A. Miller, Glenside, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 621,770, Mar. 9, 1967. This application July 14, 1969, Ser. No. 841,548

Int. Cl. C07d *91/10*

U.S. Cl. 260—302 A **9 Claims**

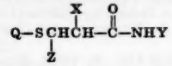
1. A process for preparing isothiazolones of the formula



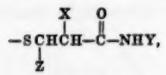
wherein

Y is hydrogen, an alkyl group of 1 to 18 carbon atoms, an aralkyl group of up to 10 carbon atoms, an aryl group of up to 10 carbon atoms, a halogen-, (C_1–C_4) alkyl- or (C_2–C_4)alkoxy-substituted aryl group, a dialkylaminoalkyl group of up to 8 carbon atoms, an alkoxyalkyl group of up to 8 carbon atoms, and aryloxyalkyl group of up to 12 carbon atoms, or a carbamoyl group of the formula

R and R^I may be hydrogen, halogen, or a lower alkyl group; and R^{II} may be an alkyl group of 1 to 18 carbon atoms, which comprises contacting a halogenating agent selected from the group consisting of chlorine, bromine, sulfuryl chloride, sulfuryl bromide, N-chlorosuccinimide, and N-bromosuccinimide with a compound of the formula



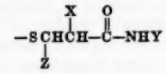
wherein Q is hydrogen or



X and Z are individually hydrogen or a lower alkyl group, and

Y is as defined above,

and wherein the halogenating agent is present to the extent of at least two mole equivalents when Q is hydrogen or to the extent of at least three mole equivalents when Q is



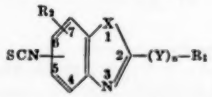
3,849,431

ISOTHIOCYANOBENZAZOLES

Jean-Jacques Gallay, Magden, René Bosshard, Birsfelden, and Paul Brenneisen, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Dec. 4, 1972, Ser. No. 311,987
Claims priority, application Switzerland, Dec. 7, 1971, 17,875/71
Int. Cl. C07d *49/38, 85/48, 91/44*
U.S. Cl. 260—306.6 R **12 Claims**

1. A compound of the general formula



(I)

wherein

the SCN— group is in the 4-, 5-, 6- or 7-position,

R_1 represents hydrogen, a straight-chain or branched alkyl or alkenyl radical having at most 17 carbon atoms, an alkyl or alkenyl radical having a total of at most 6 carbon atoms and substituted by halogen, —CN, —OH, C_1–C_5 alkoxy, C_1–C_5 alkylthio or di-(C_1–C_5)alkylamino, an optionally C_1–C_5 alkyl-substituted mono-, bi- or tricyclic cycloalkyl or cycloalkenyl radical having 3 to 10 carbon atoms in the ring structure, which can also be bound by way of a CH_2— group to the substituent Y or to the 2-position of the heterocycle,

R_2 represents hydrogen, halogen or an alkyl or alkoxy radical having at most 4 carbon atoms,

X represents oxygen, sulphur or

R_3 represents hydrogen, an alkyl or alkenyl radical having at most 5 carbon atoms, a phenyl or benzyl radical, a dimethylamino- or diethylamino-alkyl radical having 2–5 carbon atoms in the alkyl chain, an alkoxycarbonyl radical having 2–5 carbon atoms, acetyl, propionyl, trichloroacetyl, benzoyl, or a C_4–C_7 saccharide group,

Y represents oxygen, sulphur, —SO—, —SO_2—, or —NR_4,

n is the number 0 or 1,

R_4 represents hydrogen, an alkyl or alkenyl radical having at most 5 carbon atoms, or together with the N-atom and the substituent R_1 a saturated or unsaturated heterocycle having 4 to 6 carbon atoms which may also contain a further hetero atom O or S selected from the group consisting of pyrrolidine, piperidine, 2-methylpiperidine, 4-methylpiperidine, piperazine, N'-methyl, N',N'-di-methyl and N'-ethylpiperazine, morpholine, isomorpholine, thiomorpholine and hexamethyleneimine, or the group

and

R_5 stands for hydrogen, methyl or ethyl,

and their acid addition salts non-toxic for warm-blooded animals.

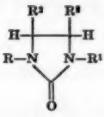
3,849,432

CERTAIN THIADIAZOLYL-CONTAINING-HALOGEN-SUBSTITUTED-IMIDAZOLIDINONES

Carl Metzger, Wuppertal-Elberfeld, and Ludwig Eue, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 9, 1972, Ser. No. 251,666
Claims priority, application Germany, May 12, 1971, P 21 23 450.4
Int. Cl. C07d *99/10*
U.S. Cl. 260—306.8 D **20 Claims**

1. Imidazolidinone-(2) compound of the formula:



wherein

R is 1,3,4-thiadiazol-2-yl or 5-substituted 1,3,4-thiadiazol-2-yl wherein the substituent is one of alkyl, haloalkyl, alkylthio, alkylsulfoxy and alkylsulfonyl of up to 6 carbon atoms,

R_1 is lower alkyl, lower alkenyl, or lower alkynyl of up to 10 carbon atoms,

R_2 is halogen, and

R_3 is halogen, lower alkoxy, lower alkenyloxy, lower alkynyloxy, lower alkylthio, lower alkenylthio or lower alkynylthio, containing up to 10 carbon atoms.

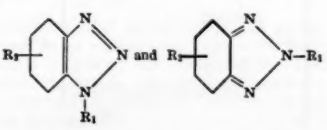
3,849,433

4,5,6,7-TETRAHYDROBENZOTRIAZOLES AND PROCESS OF MAKING THE SAME

Ivan Butula, Zagreb, Yugoslavia, assignor to Rhein-Chemie Rheinau G.m.b.H., Mannheim, Germany

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,255
Claims priority, application Germany, Sept. 26, 1969, P 19 48 794.6
Int. Cl. C07d *55/04*
U.S. Cl. 260—308 B **13 Claims**

1. A 4,5,6,7-tetrahydrobenzotriazole of the group consisting of compounds having the following formulae:



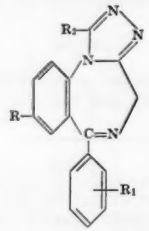
in which R_1 is hydrogen or an alkyl radical containing up to 18 carbon atoms, and R_2 is a carboxyl or lower alkoxycarbonyl radical, and acid addition and quaternary ammonium salts thereof.

3,849,434
PROCESS FOR PREPARING TRIAZOLOBENZODIAZEPINES

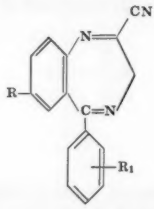
David Llewellyn Coffen, Glenridge, and Rodney Ian Fryer, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 27, 1973, Ser. No. 383,363
Int. Cl. C07d *53/06, 57/02*
U.S. Cl. 260—308 R 5 Claims

1. A process for the preparation of a compound of the formula



wherein R is selected from the group consisting of hydrogen, halogen, lower alkyl, trifluoromethyl, nitro, cyano, lower alkoxy and lower alkylthio; R_1 signifies hydrogen or halogen; and R_2 signifies hydrogen or lower alkyl comprising reacting a compound of the formula



wherein R and R_1 are as described above with a compound of the formula

$$R_2—CO—NHNH_2$$

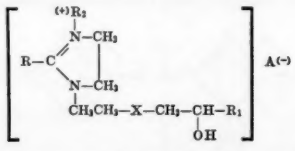
wherein R_2 is as described above.

3,849,435
IMIDAZOLINIUM SALTS AS SOFTENING AGENTS FOR TEXTILES

Helmut Diery, Kelkheim, Taunus, Ulrich Cuntze, Hofheim, Taunus, Adolf May, Diedenbergen, Taunus, and Eckard Milewski, Schwalbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Mar. 1, 1973, Ser. No. 337,203
Claims priority, application Germany, Mar. 2, 1972, P 22 10 087.4
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.6 2 Claims

1. A compound of the formula



(I),

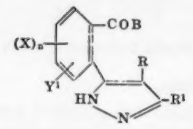
in which R represents alkyl or alkenyl of 7 to 21 carbon atoms, R_1 represents alkyl or alkenyl of 6 to 18 carbon atoms, of which radicals R and R_1 at least one contains more than 14 carbon atoms, R_2 represents methyl or ethyl, X represents oxygen or —NH— and $A^{(-)}$ represents $Cl^{(-)}$ or $R_2—OSO_3^{(-)}$.

3,849,436
CYCLIZATION OF 2-(3-ARYL - 5 - PYRAZOLYL) BENZOIC ACIDS, ESTERS AND AMIDES TO 2-ARYLPYRAZOLO[5,1-a]ISOINDOL-8-ONES

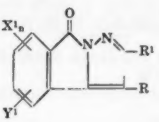
Alexander Lawrence Johnson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 4, 1972, Ser. No. 294,897
Int. Cl. C07d *57/00*
U.S. Cl. 260—310 R 3 Claims

1. The process of contacting a compound of the formula

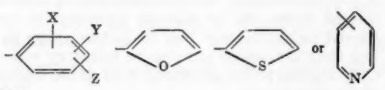


with a condensing agent consisting of a lower alkanoic anhydride in the presence of a tertiary amine selected from the group consisting of pyridine, trimethylamine, triethylamine, 1,4-diazabicyclo[2.2.2] octane, quinuclidine, quinoline, the 2-, 3-, and 4-picolines, the 2,3,4-, 2,3,5-, 2,3,6- and 2,4,6-collidines, the 2,3-, 2,4-, 2,5-, 2,6-, 3,4- and 3,5-lutidines, 1,4 - dimethylpiperazine, 4 - dimethylaminopyridine and N,N-dimethylaniline, at a temperature range of 20–100° C. from 15 minutes up to 8 hours and recovering a product of the formula



wherein

X^1 is H, Cl, Br or F;
Y^1 is H, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or CF_3;
n is a whole number 1, 2, or 3;
R is H, alkyl of 1 to 4 carbon atoms, or together with X is —CH_2—, —CH_2CH_2—, or CH=CH— connecting the 4-position of the pyrazole ring to the 2-position of the R^1 substituent;
R^1 is tert-alkyl of 4 through 12 carbon atoms, naphthyl, phenanthryl,



in which

X is H, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, NO_2, CH_3SO_2, CF_3, CN, or carboalkoxy of 1 to 4 carbon atoms;
Y is H, halogen, alkoxy of 1 to 4 carbon atoms, or alkyl of 1 to 4 carbon atoms;
Z is H, halogen, alkoxy of 1 to 4 carbon atoms, or alkyl of 1 to 4 carbon atoms;
B is OM or NR^2R^3, in which
M is H, benzyl, or alkyl of 1–6 carbon atoms, optionally substituted with hydroxy or halogen; and
R^2 and R^3 are each hydrogen or alkyl of 1 to 6 carbon atoms.

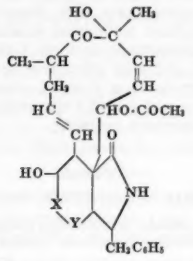
3,849,437

NITROGEN-CONTAINING COMPOUNDS

John Clark Ousby and William Brian Turner, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 607,905, Jan. 9, 1967. This application Jan. 16, 1968, Ser. No. 698,131
Claims priority, application Great Britain, Jan. 31, 1966, 4,182/66
Int. Cl. A61k *21/00*
U.S. Cl. 260—325 4 Claims

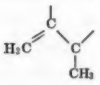
1. An antibiotic product which has the formula:



wherein the group

represents the group

or the group



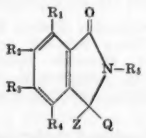
3,849,438

2-SUBSTITUTED - 3 - DISUBSTITUTED-4,5,6,7-SUBSTITUTED OR UNSUBSTITUTED PHTHALIMIDINES

William J. Houlihan, Baden, Austria, and Jeffrey Nadelson, Lake Parsippany, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 126,272, Mar. 19, 1971. This application Mar. 7, 1972, Ser. No. 232,615
Int. Cl. C07d *27/50*
U.S. Cl. 260—325 24 Claims

1. A compound of the formula,



where

R_1 is hydrogen, lower alkoxy, halo having an atomic weight of 19 to 36, or trifluoromethyl,

R_2 is hydrogen, lower alkyl, lower alkoxy, halo having an atomic weight of 19 to 36, trifluoromethyl, nitro or amino,

R_3 is hydrogen, lower alkyl, lower alkoxy, halo having an atomic weight of 19 to 36, trifluoromethyl, nitro, amino, dialkylamino or phenyl,

R_4 is hydrogen, lower alkyl, lower alkoxy, or trifluoromethyl,

R_5 is hydrogen, lower alkyl, phenyl, allyl, benzyl, hydroxyethyl, carbamoyloxy, or carbethoxymethyl, or

R_1 and R_2 and R_3, or R_3 and R_4, together are methylenedioxy,

Q is

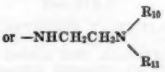
where R_5 and R_6 are each independently methyl or ethyl, or

R_6 and R_7 together are $-(CH_2)_n-$ where n is 4, 5, or 6,

R_8 is methyl, vinyl or allyl, or

where R_9 is lower alkyl,

Z is hydroxy, amino, lower alkoxy,



where R_{10} and R_{11} are independently lower alkyl, provided that

(1) no more than two of R_1, R_2, R_3 or R_4 are other than hydrogen,

(2) when either of R_1 of R_3 is halo, the other of R_1 or R_3 is not halo,

(3) only one of R_1 and R_3, or R_2 and R_4 is alkoxy at one time,

(4) there are no two trifluoromethyl groups on adjacent carbon atoms,

(5) only on of R_2 or R_3 is nitro or amino,

(6) when Z is hydroxy and Q is t-butyl, then R_1, R_2, R_3, R_4 and R_5 are not hydrogen.

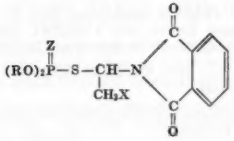
3,849,439

PROCESS FOR THE PRODUCTION OF ORGANIC PHOSPHORIC ACID ESTERS

Kennosuke Imamura, Tokyo, Shukichi Nabekawa, Funabashi, and Masao Takada, Tokyo, Japan, assignors to Nippon Chemical Industrial Co., Ltd., Tokyo, Japan

No Drawing. Filed Jan. 6, 1972, Ser. No. 215,903
Claims priority, application Japan, Aug. 10, 1971, 46/59,906
Int. Cl. C07d *27/52*
U.S. Cl. 260—326 E 13 Claims

1. A process for producing an organic phosphoric acid ester represented by the general formula

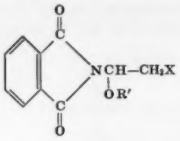


wherein

R represents an alkyl group having 1–3 carbon atoms, Z represents an oxygen atom or a sulfur atom, and X represents a chlorine atom or a bromine atom which comprises reacting an o,o-dialkylthiophosphoric acid or an o,o-dialkyldithiophosphoric acid represented by the general formula

wherein R and Z have the above meaning

with N-(1-alkoxy-2-haloethyl) phthalimide represented by the general formula



wherein

R' represents an alkyl group having 1–3 carbon atoms and X has the above meaning

in the presence of an acid catalyst selected from a protonic acid, Lewis acid or a mixture thereof; wherein said protonic acid is selected from the group consisting of hydrochloric acid, sulfuric acid and phosphoric acid; and said Lewis acid is zinc chloride.

3,849,440

IMIDOMETHYL PHOSPHONATES

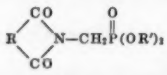
Peter Golborn, Lewiston, and James J. Duffy, Buffalo, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Mar. 30, 1972, Ser. No. 239,760

Int. Cl. C07d *27/10*

U.S. Cl. 260—326.5 A **6 Claims**

1. A compound of the formula



wherein R' is selected from the group consisting of phenyl, lower alkenyl and halogen substituted and unsubstituted lower alkyl of 1 to 6 carbon atoms and R is selected from the group consisting of lower alkenylene and lower alkylene of 1 to 8 carbon atoms, wherein only 2 carbon atoms in said group form annular members of the imide rings.

3,849,441

SUBSTITUTED HETEROCYCLIC DERIVATIVES OF AZEPINE

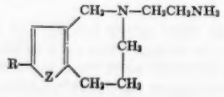
Martin Joseph Weiss, Oradell, N.J., Gabriel Joseph Gibs, Pearl River, and John Frank Poletto, Nanuet, N.Y., and William Alan Remers, West Lafayette, Ind., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Oct. 1, 1971, Ser. No. 185,876, now Patent No. 3,758,501. Divided and this application July 5, 1973, Ser. No. 376,777

Int. Cl. C07d *27/00*

U.S. Cl. 260—326.9 **7 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein Z is a divalent moiety selected from the group consisting of oxa, thia and imino, and R is selected from the group consisting of hydrogen and an alkyl group having up to four carbon atoms; and the pharmacologically acceptable acid-addition salts thereof.

3,849,442

MANUFACTURE OF 1-ALKENYL-2-AMINOMETHYL PYRROLIDINES

Eric-Alain Denzler, Zurich, Switzerland, assignor to Fratmann S.A., Bougeries, Switzerland

No Drawing. Filed May 17, 1972, Ser. No. 254,235

Claims priority, application Switzerland, Sept. 30, 1971, 14,341/71

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.85 **2 Claims**

1. A process for the manufacture of 1-allyl-2-aminomethyl pyrrolidine which comprises the steps of methylating 1-allyl-2-pyrrolidone with dimethyl sulfate; then treating the resultant methylated product with an alkali alkanol and nitromethane to form 1-allyl-2-nitromethylene pyrrolidine and then selectively reducing the nitromethylene group to form 1-allyl-2-aminomethyl pyrrolidine by reducing said 1-allyl-2-nitromethylene pyrrolidine with lithium aluminum hydride.

3,849,443

PROCESS FOR MAKING POLYMERCAPTANS

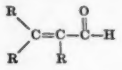
Rector P. Louthan, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 11, 1971, Ser. No. 197,922

Int. Cl. C07d *79/00*

U.S. Cl. 260—327 R **6 Claims**

1. A process for producing a polymercaptan which comprises reacting an alpha, beta-unsaturated aldehyde compound with hydrogen sulfide in solution in an alcohol boiling below about 100° C. containing sulfur and a nitrogenous base, wherein the alpha, beta-unsaturated aldehyde compound is at least one selected from the group of compounds having the formula:



wherein each R substituent is selected from hydrogen, alkyl or aryl and wherein each R substituent is so selected that the compound contains 4–18 carbon atoms, wherein the temperature is in the approximate range 20–150° C., the molar ratio of hydrogen sulfide to the aldehyde reactant is in the approximate range of from about 2:1 to about 10:1, the nitrogenous base is ammonia in the approximate range of 0.1 to 2.5 grams and the amount of sulfur is in the approximate range of from about .5 to about 4 grams, per mole of the aldehyde reactant and recovering a polymercaptan possessing a plurality of mercapto groups.

3,849,444

PRODUCTION OF BUTANEDIOLFORMAL

Hugo Fuchs, Ludwigshafen (Rhine), Ernst Ricker, Frankenthal, Pfalz, Franz Schmidt and Erich Schwartz, Mannheim, and Heinrich Sperber, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation of abandoned application Ser. No. 762,928, Sept. 26, 1968. This application May 3, 1971, Ser. No. 139,922

Claims priority, application Germany, Sept. 29, 1967, P 16 43 248.7

Int. Cl. C07d *17/00*

U.S. Cl. 260—338 **3 Claims**

1. In a process for the production of 1,4-butanediolformal wherein a mixture of butanediol-1,4, an aqueous

solution of formaldehyde or a substance yielding formaldehyde, and an acid or acid salt is heated in a reaction vessel, the improvement which comprises continuously

(a) heating at the boil a constant amount of said reaction mixture which contains less than 1% by weight of a strong acid or less than 10% by weight of an acid salt or a weak acid,

(b) evaporating the product of the synthesis from the reaction mixture at such a velocity that a mean residue time in the reaction vessel of less than 240 minutes is set up for the reaction mixture,

(c) condensing the vapors of the product of the synthesis,

(d) separating the two layers which form in the liquid condensate,

(e) subjecting the upper layer to treatment with alkali, passing said layer through an evaporator and thereafter fractionally distilling said treated layer, and

(f) subjecting the lower layer to azeotropic distillation and recycling the the distillate to the uncondensed product stream which leaves the reaction vessel.

3,849,445

POLYCARBAMATES OF ORGANIC POLYISOCYANATES AND CYCLIC ACETALS

Anthony Joseph Papa, St. Albans, and William Robert Proops, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

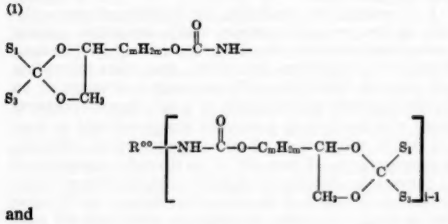
No Drawing. Original application May 25, 1971, Ser. No. 146,843, now Patent No. 3,784,594. Divided and this application Apr. 27, 1972, Ser. No. 248,201

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 **17 Claims**

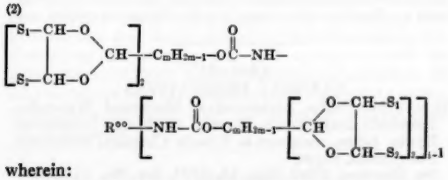
1. A polycarbamate having a formula selected from the group consisting of

(1)



and

(2)



wherein:

S_1 is selected from the group consisting of hydrogen and alkyl having from 1 to 10 carbon atoms;

S_2 is selected from the group consisting of hydrogen and alkyl having from 1 to 10 carbon atoms;

S_3 is selected from the group consisting of hydrogen, alkyl having from 1 to 10 carbon atoms, alkenyl having from 2 to 10 carbon atoms and dihaloalkyl having from 2 to 10 carbon atoms;

m is an integer having a value from 1 to 10;

$R^{\circ\circ}$ represents the unsubstituted nucleus of 2,4-tolylene diisocyanate, 2,6-tolylene diisocyanate or liquid poly (phenylmethylene) polyisocyanate; and

i has an average value from 2 to about 3.2.

3,849,446

CHROMONE-3-CARBOXYLIC ACIDS

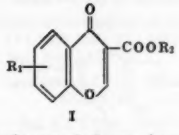
Max von Strandtmann, Rockaway Township, Sylvester Klutchko, Hackettstown, Daniel Kaminsky, Parsippany, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,503

Int. Cl. C07d *7/34*

U.S. Cl. 260—345.2 **7 Claims**

1. A compound of the formula:



I

wherein R_1 is hydrogen, halogen, lower alkoxy or hydroxy, and R_2 is hydrogen or lower alkyl.

3,849,447

BENZOPYRAN DERIVATIVES

Ulrich Eder and Rudolf Wiechert, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

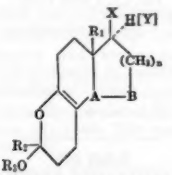
No Drawing. Filed June 9, 1972, Ser. No. 261,216

Claims priority, application Germany, June 11, 1971, P 21 30 053.8; Nov. 30, 1971, P 21 60 066.8

Int. Cl. C07d *7/20*

U.S. Cl. 260—345.2 **31 Claims**

1. A benzopyran of the formula



wherein R_1, R_2 and R_3 each are lower alkyl; *n* is the integer 1 or 2; A—B is CH—CH_2 or C=CH; X is OH, alkoxy of 1–10 carbon atoms, alkanoyloxy of 1–10 carbon atoms or benzyloxy and Y is H.

3,849,448

VAPOR PHASE OXIDATION OF BENZENE TO MALEIC ANHYDRIDE AT LOW OXYGEN TO BENZENE MOLAR RATIOS AND HIGH BENZENE CONCENTRATIONS

Clifford Archibald Crampton, 15 Wood End Road, Harpenden, England, and Charles Frederick Cardy, 14 Mount Grace Road, Stopley, Luton, England

No Drawing. Continuation of abandoned application Ser. No. 787,545, Dec. 27, 1968. This application Oct. 18, 1971, Ser. No. 190,375

Claims priority, application Great Britain, Jan. 3, 1968, 429/68

Int. Cl. C07d *5/10*

U.S. Cl. 260—346.8 A **19 Claims**

1. A process for the production of maleic anhydride by the catalytic partial oxidation of benzene comprising the steps of contacting at elevated temperature a gaseous mixture containing benzene and molecular oxygen, said gaseous mixture containing at least 4.55 volume percent of benzene and having an oxygen to benzene molar ratio of less than 4.5 to 1, with a fluidised oxidation catalyst

and separating maleic anhydride from the resultant gaseous mixture.

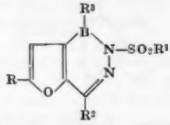
3,849,449

FURO[3,2-d][1,2,3]DIAZABORINES

Gareth Morse Davies, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Sept. 14, 1972, Ser. No. 289,114
Claims priority, application Great Britain, Oct. 4, 1971, 46,047/71; July 6, 1972, 31,691/72
Int. Cl. C07d *5/16, 107/02;* **C07f** *5/02*
U.S. Cl. 260—347.2 **7 Claims**

1. A boron derivative of the formula:



wherein R is hydrogen, methyl or chlorine;

R^1 is methyl, phenyl or phenyl substituted with 1 to 3 substituents selected from the group consisting of halogen, nitro, amino, methyl, methoxy, methylthio and acetamido;

R^2 is hydrogen, methyl or phenyl; and

R^3 is hydroxy.

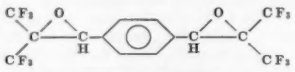
3,849,450

BIS(TRIFLUOROMETHYL)EPOXIDES

Jacques G. O'Rear, Camp Springs, and James R. Griffith, Riverdale Heights, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Original application Feb. 2, 1973, Ser. No. 328,986, now abandoned. Divided and this application Dec. 11, 1973, Ser. No. 423,847
Int. Cl. C07d *1/00*
U.S. Cl. 260—348 R **1 Claim**

1. A difunctional epoxide compound comprising the formula

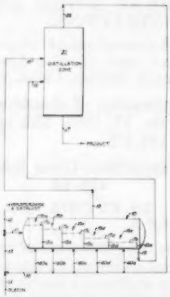


3,849,451

EPOXIDATION PROCESS

Theodore W. Stein, Hastings-on-the-Hudson, Harold Gilman, Milwood, and Richard L. Bobeck, East Northport, N.Y., assignors to Halcon International, Inc.

Continuation of abandoned application Ser. No. 51,332, June 30, 1970. This application Dec. 4, 1972, Ser. No. 311,608
Int. Cl. C07d *1/08*
U.S. Cl. 260—348.5 L **3 Claims**



1. In the continuous process for the preparation of propylene oxide by the reaction between propylene and an organic hydroperoxide in the presence of a liquid phase reaction medium and in the presence of a catalyst selected from at least one member of the group consisting of titanium, vanadium, chromium, columbium, selenium, zirconium, molybdenum, tellurium, tantalum, tungsten, rhenium and uranium; the improvement which comprises, continuously conducting the reaction in a reactor at a temperature within the range between about 90° C. and about 200° C. and at the autogenous pressure of the liquid phase reaction medium so that said medium is a boiling liquid, the reactor feed comprising 10 to 80 mol percent propylene and 1 to 60 mol percent hydroperoxide, continuously volatilizing a portion of the liquid phase reaction medium during the conduct of the reaction, as a result of said boiling, said volatilized portion containing at least one-fourth of the propylene oxide formed in the reaction, withdrawing the propylene oxide containing vaporized reaction medium from the reactor as a vapor, continuously withdrawing the unvaporized reaction medium containing the balance of the propylene oxide product from the reactor as a liquid, continuously separating propylene oxide from said withdrawn vaporized reaction medium by fractional distillation at temperatures not to exceed 160° C. and continuously recycling propylene in said withdrawn vaporized reaction medium to the epoxidation reaction as part of the said feed thereto.

3,849,452

PROCESS FOR PRODUCING α-ANTHRAQUINONE-SULFONATES WITH LOW MERCURY CONTENT

Eitaro Hongo and Hirohiko Yamada, Osaka, Yozo Fujii, Ashiya, Katsumi Masuda, Osaka-fu, and Junichi Itou and Takaaki Nakano, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Limited

No Drawing. Filed Mar. 17, 1972, Ser. No. 235,863
Claims priority, application Japan, Mar. 27, 1971, 46/18,109
Int. Cl. C09b *1/00*
U.S. Cl. 260—370 **5 Claims**

1. A process for producing an α-anthraquinone sulfonate of low mercury content, which comprises reacting a thiosulfate selected from the group consisting of sodium thiosulfate, ammonium thiosulfate, potassium thiosulfate and calcium thiosulfate with an aqueous solution of an α-anthraquinone sulfonic acid or a salt thereof contaminated with mercury or a mercury compound used as catalyst in the preparation of an α-anthraquinone sulfonate, at a temperature of from 80° C. to the reflux temperature to convert the mercury or mercury compound to mercury sulfide, the amount of the thiosulfate being 1 to 50 times the chemical equivalent necessary to react with the mercury or mercury compound, removing the resulting precipitates by filtration and subjecting the filtrate to salting out.

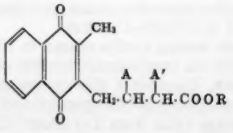
3,849,453

QUINONE DERIVATIVES

Hiroshi Morimoto, Nishinomiya, Masazumi Watanabe, Takatsuki, Isuke Imada, Ibaraki, and Masao Nishikawa, Kyoto, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,547
Claims priority, application Japan, Mar. 17, 1970, 45/22,497; Mar. 18, 1970, 45/22,805
Int. Cl. C07c *63/52*
U.S. Cl. 260—396 R **5 Claims**

1. A member selected from the group consisting of a compound of the formula



wherein one of A and A' is hydrogen and the other is lower alkyl, and R is a member selected from the group consisting of hydrogen, alkyl of 1–6 carbon atoms, cycloalkyl of up to 6 carbon atoms and allyl, and pharmaceutically acceptable salts thereof.

3,849,454

N-SUBSTITUTED FATTY ACID AMIDE LUBRICANTS

Frank C. Magne, Robert R. Mod, and Gene Sumrell, New Orleans, La., and Winfred E. Parker, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Aug. 31, 1971, Ser. No. 176,734. Divided and this application Apr. 6, 1973, Ser. No. 348,803

Int. Cl. A23j *7/00;* **C07f** *9/02*

U.S. Cl. 260—403 **1 Claim**

1. The compound N,N-dibutyl-[9(10)hydroxy-(9)10-dibutylphosphato]stearamide.

3,849,455

PROCESS FOR PREPARING METHYL AND ETHYL 3,11 - DIMETHYL - 7 - ETHYLTRIDECA-2,6,10-TRIENOATES

John A. Findlay, 682 George St., Fredericton, New Brunswick, Canada

No Drawing. Original application Dec. 30, 1969, Ser. No. 889,287, now abandoned. Divided and this application May 15, 1972, Ser. No. 253,085

Claims priority, application Canada, Jan. 6, 1969, 39,394

Int. Cl. C07c *67/00;* **C07d** *1/22*

U.S. Cl. 260—410.9 R **3 Claims**

1. A process for preparing an isomeric mixture of methyl or ethyl 3,11-dimethyl-7-ethyl-trideca-2,6,10-trienoates which comprises treating 3-methyl-1-penten-3-ol with ethyl vinyl ether in the presence of orthophosphoric acid to yield the α-ethoxyethyl ether of 3-methyl-1-penten-3-ol; heating said last-named compound in the presence of orthophosphoric acid to obtain 5-methyl-4-hepten-1-al; treating said last-named compound with ethyl magnesium bromide and decomposing the reaction mixture to obtain 7-methyl-6-nonen-3-ol; treating said last-named compound with Jones' reagent to obtain 7-methyl-6-nonen-3-one; treating said last-named compound with the ylid prepared from 4-oxopentyl-1-triphenyl-phosphonium iodide ethylene ketal to obtain 6-ethyl-10-methyldodeca-5,9-dien-2-one ethylene ketal; treating said latter compound with hydrochloric acid to obtain 6-ethyl-10-methyl-dodeca-5,9-dien-2-one; and treating said later compound with the anion prepared from diethylcarbomethoxymethyl or diethylcarbethoxymethyl phosphonate in benzene to obtain, respectively, methyl or ethyl 3,11-dimethyl-7-ethyltrideca-2,6,10-trienoate.

3,849,456 ✓

PREPARATION OF METHYL ALKANOATES

Charles H. McMullen, Scarsdale, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Mar. 22, 1972, Ser. No. 236,968

Int. Cl. C07c *67/00*

U.S. Cl. 260—410.9 R **6 Claims**

1. A process for the preparation of telomeric linear methyl alkanoates which comprises reacting (i) in the liquid phase, (ii) methyl formate with ethylene, (iii) in the presence of an initiating amount of an organic peroxide of the group consisting of alkyl peracylates, diacyl peroxides, and organic hydroperoxides, (iv) at a temperature in the range of from about 50° C. to 115° C., (v) using a molar excess of said methylformate with relation to said ethylene, and (vi) for a period of time sufficient to produce said telomeric linear methyl alkanoates.

3,849,457

PREPARATION OF CARBOXYLIC ACIDS BY HYDROGENOLYSIS OF ESTERS

Werner O. Haag, Trenton, and Darrell Duayne Whitehurst, Titusville, N.J., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 794,342, Jan. 27, 1969. This application Mar. 15, 1972, Ser. No. 235,090

Claims priority, application Great Britain, Dec. 29, 1969, 63,055/69

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **27 Claims**

1. A method for the selective hydrogenolysis of an ester to a carboxylic acid without reduction of the carbonyl group of said ester comprising reacting said ester with hydrogen at an elevated temperature in the presence of a dual functional catalyst system comprising (1) a hydrogenation catalyst component selected from the group consisting of metals and compounds of metals of Group VIII of the Periodic System and (2) an acid acting catalyst component selected from the group consisting of a crystalline aluminosilicate zeolite and an ion-exchange resin having strongly acidic functional groups selected from the group consisting of sulfonic acid, phenylsulfonic acid and phosphonic acid and the resin is a cationic resin.

3,849,458

METHOD FOR DEUTERATING ORGANIC COMPOUNDS

Nguyen Dinh-Nguyen and Einar August Stenhagen, Molndal, Sweden, assignors to Incentive Research Development AB, Bromma, Sweden

No Drawing. Continuation of abandoned application Ser. No. 522,030, Jan. 21, 1966. This application Sept. 16, 1968, Ser. No. 768,950

Int. Cl. C07c *53/22*

U.S. Cl. 260—413 **9 Claims**

1. In the method of deuterating an organic compound containing hydrogen atoms replaceable by deuterium wherein said compound is reacted with heavy water as a deuterium source in the presence of alkali metal deuteroxide and a deuterium reduced Adams catalyst

$$(PtO_2H_2O),$$

the improvement which consists in carrying out the deuterating reaction in the presence of deuterium peroxide.

3,849,459

CATALYTIC COMPOUNDS AND PROCESSES FOR THEIR PREPARATION

Peter M. Maitlis, Hamilton, Ontario, Canada, Colin White, Selby, England, Jung W. Kang, Clinton, Ohio, and Devinder S. Gill, Hamilton, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

No Drawing. Filed May 4, 1972, Ser. No. 250,203

Claims priority, application Canada, May 25, 1971, 113,732

Int. Cl. C07f *15/00*

U.S. Cl. 260—429 CY **8 Claims**

1. Hydrided compounds of rhodium or iridium or a mixture of rhodium and iridium having the general formula $(C_5R_5M)_2H_xL_{4-x-y}HL$ where

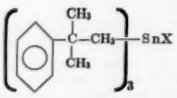
C_5 is the cyclopentadienyl ring,
R_5 are the methyl group substituents attached to the ring,
M is rhodium or iridium or a mixture of rhodium and iridium,
H is hydrogen,
L is any one of halide, trifluoroacetate or hexafluorophosphate,
x is any number from 1 to 3, and
y is 0 or 1.

3,849,460
PREPARATION OF TRINEOPHYLTIN HALIDES

David A. Daniels, Kendall Park, and William R. Davis, South Plainfield, N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.

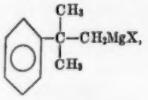
No Drawing. Filed June 11, 1973, Ser. No. 368,813
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 3 Claims

1. In a method for preparing trineophyltin halides,



in high yield and purity, said method consisting of the following steps:

(1) adding a hydrocarbon solution of a stannic halide, SnX_4 to an ether solution of a neophyl magnesium halide



(2) hydrolyzing the resultant reaction mixture using an aqueous solution of an acid HX, and

(3) concentrating the organic portion of the resultant two-phase liquid to isolate the trineophyltin halide, wherein X represents chlorine or bromine,

the improvement of which consists of maintaining the temperature of the reaction mixture at between 55 and 65° C. during the addition of said stannic halide and until the time at which the reaction between the stannic halide and neophyl magnesium halide is substantially complete.

3,849,461
PREPARATION OF LIQUID POLYNUCLEAR FERROCENE DERIVATIVES

Harry J. Hyer, Palo Alto, and Thomas P. Rudy, Saratoga, Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 663,517, Aug. 28, 1967. This application Mar. 29, 1968, Ser. No. 718,312
Int. Cl. C07f 15/02
U.S. Cl. 260—439 CY 22 Claims

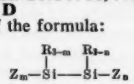
1. In a method for producing noncrystalline noncrystallizable liquid polynuclear ferrocene derivatives which comprises condensing a hydrocarbyl substituted ferrocene, said hydrocarbyl substituents having m carbon atoms, with a material selected from the group consisting of aliphatic aldehydes having n carbon atoms and acetals derived therefrom, wherein m is an integer from 1–6, n is an integer from 1–12 and the value of the relationship $2m+n$ is from 3–14, in an inert diluent and in the presence of a catalytic amount of acid; the improvement which comprises adding the acid catalyst to the inert diluent prior to the formation of the completed reaction mixture, dissipating the heat of solvation thereof and subsequently completing the reaction mixture by addition of said material selected from the group consisting of aliphatic aldehydes having n carbon atoms and acetals derived therefrom to the mixture of the other reactants and the catalyst.

3,849,462
ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANES

Guenther Fritz Lengnick, Adrian, Mich., assignor to Stauffer Chemical Company, Westport, Conn.

No Drawing. Application June 8, 1973, Ser. No. 368,427, which is a continuation-in-part of abandoned application Ser. No. 270,368, July 10, 1972. Divided and this application Feb. 8, 1974, Ser. No. 440,927
Int. Cl. C07f 7/08, 7/10
U.S. Cl. 260—448.2 D 3 Claims

1. A compound of the formula:



wherein R is selected from the group consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals and cyanoalkyl radicals; Z is a hydrolyzable group selected from the class consisting of aminooxy radicals, amino radicals, oximo radicals, amido radicals and phosphato radicals; m is a number of from 1 to 3, n is a number of from 0 to 3 and the sum of m and n is greater than 2.

3,849,463
PREVENTION OF SILICA PORE OBSTRUCTION IN CRYSTALLINE ALUMINOSILICATES

Francis G. Dwyer, West Chester, Pa., and Pochen Chu, Woodbury, N.J., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 886,400, Dec. 18, 1969. This application Dec. 11, 1972, Ser. No. 313,717
Int. Cl. C01b 33/28
U.S. Cl. 260—448 C 6 Claims

1. A method of decreasing silica pore obstruction in crystalline aluminosilicates having a SiO_2/Al_2O_3 ratio greater than 6 which comprises admixing a crystalline aluminosilicate zeolite reaction mixture sufficient to prepare a crystalline aluminosilicate zeolite, said reaction mixture comprising the following components expressed as oxides in the mole ratios set forth:

$Na_2O/(R_2O+Na_2O)$	.31 to <1
$(R_2O+Na_2O)/SiO_2$	0.5 to .90
SiO_2/Al_2O_3	3 to 60
$H_2O/(R_2O+Na_2O)$	15 to 600

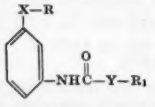
wherein R is a tetramethylammonium cation, with an alkali metal salt containing monovalent anions in an amount sufficient to decrease silica pore obstruction, and maintaining the mixture until crystals having the X-ray diffraction pattern values shown in Table 2 of the specification are formed.

3,849,464
META-THIOCARBAMILATE ETHERS AND SULFIDES

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Dec. 10, 1970, Ser. No. 97,004, now Patent No. 3,781,327. Divided and this application Sept. 4, 1973, Ser. No. 394,368
Int. Cl. C07c 155/02
U.S. Cl. 260—455 A 10 Claims

1. A compound having the formula



in which X is oxygen or sulfur; Y is sulfur; R is alkyl of from 1 to 10 carbon atoms, inclusive, lower alkenyl, vinyloxyalkyl in which the total carbon content is from 3 to 7

carbon atoms, inclusive, ketoalkyl having from 2 to 6 carbon atoms, inclusive, or alkylthioalkyl in which the total carbon content is from 2 to 7 carbon atoms, inclusive; R_1 is lower alkyl or lower alkenyl.

3,849,465

N-CYANOIMINES AND N-CYANOAZIRIDINES

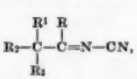
Frank Dennis Marsh, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application July 16, 1964, Ser. No. 383,233, now Patent No. 3,510,474, which is a continuation-in-part of abandoned application Ser. No. 234,878, Nov. 1, 1962. Divided and this application June 11, 1969, Ser. No. 832,423

Int. Cl. C07c *119/00*

U.S. Cl. 260—453 R 8 Claims

1. An N-cyanoimine of the formula



wherein the R's taken individually, contain up to 18 carbons and are members of the group consisting of hydrogen, alkoxy and hydrocarbyl and any two R's may be joined to form a divalent akylene group of 2–10 carbons.

3,849,466

LONG CHAIN ALIPHATIC THIOLESTERS OF CYCLOPROPIONIC ACID

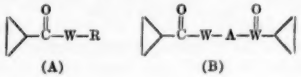
Clive A. Henrick and Gerardus B. Staal, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed Apr. 13, 1973, Ser. No. 350,952

Int. Cl. C07c *155/08*

U.S. Cl. 260—455 R 4 Claims

1. A compound of the formulas A and B:



(A) (B)

wherein,

W is —S—;
R is a monovalent aliphatic radical of at least 10 carbon atoms; and
A is alkylene, alkenylene or alkynylene.

3,849,467

SUBSTITUTED O-(AMINOSULFONYL)-GLYCOLIC ANILIDES

Dietrich Mangold, Neckargemuend, Adolf Fischer, Mutterstadt, and Wolfgang Rohr and Gerhard Hamprecht, Mannheim, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

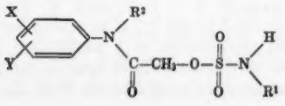
No Drawing. Filed Feb. 21, 1974, Ser. No. 444,302

Claims priority, application Germany, Mar. 3, 1973, P 23 10 757.5

Int. Cl. C07c *143/68*

U.S. Cl. 264—456 A 26 Claims

1. A substituted O-(aminosulfonyl)-glycolic anilide of the formula



wherein R^1 denotes hydrogen, alkyl or haloalkyl of 1 to 6 carbon atoms, cyclo/pentyl or cyclohexyl, R^2 denotes alkyl of 1 to 6 carbon atoms, cyclopentyl or cyclohexyl, X denotes hydrogen, halogen, alkyl, haloalkyl or alkoxy of 1 to 6 carbon atoms, Y denotes hydrogen or alkyl of 1 to 6 carbon atoms, with the proviso that both X and Y cannot denote hydrogen.

3,849,468

METHOD FOR THE CONTINUOUS PREPARATION OF ALKYLPEROXYDICARBONATES

Robert Busseret, Chaponost, France, assignor to Rhone-Progil, Paris, France

Filed Nov. 10, 1972, Ser. No. 305,351

Claims priority, application France, Nov. 18, 1971, 7141287

Int. Cl. C07c *73/00, 73/02*

U.S. Cl. 260—463 9 Claims

1. A process for the continuous preparation of alkylperoxydicarbonates in solution from sodium peroxide and alkylchloroformates comprising continuously circulating in a reaction chamber an aqueous liquid maintained at a temperature of at least —10° C., continuously introducing into said aqueous liquid sodium hydroxide, hydrogen peroxide in a stoichiometric excess of 10–20%, alkylchloroformate and a solvent for said alkylperoxydicarbonate, at flow rates such that the pH of the aqueous liquid is constantly maintained at a value within the range of 3 to 10, whereby the amount of sodium hydroxide formed is in excess of 10–20% by weight with respect to the stoichiometric ratio of the alkylformate/sodium peroxide, continuously separating the obtained solution of alkylperoxydicarbonate from the aqueous liquid, washing said solution with water, and separating the washed solution of alkylperoxydicarbonate from the wash water.

3,849,469

PREPARATION OF α-OXIMINONITRILES

Manfred Jautelat, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 29, 1973, Ser. No. 392,831

Claims priority, application Germany, Sept. 6, 1972, P 22 43 629.9

Int. Cl. C07c *121/02*

U.S. Cl. 260—464 9 Claims

1. A process for the preparation of an α-oximinonitrile of the formula

in which R is an alkyl, alkenyl or alkynyl radical of 2–12 carbon atoms, a halogenoalkyl, cyanoalkyl, nitroalkyl or hydroxyalkyl radical of 1–8 carbon atoms, or a cycloalkyl radical, comprising reacting an α-iminonitrile of the formula

in which R^1 is one of the radicals specified for R, or is an aryl or a heterocyclic radical, with an acid-addition salt of hydroxylamine in the presence of an inert diluent at a temperature of about 20° to 150° C.

3,849,470
5-BENZYL PYRIMIDINES INTERMEDIATES THEREFORE, AND METHOD

Ronald M. Cresswell, Scarsdale, John W. Mentha, Hartsdale, and Russell L. Seaman, Chappaqua, N.Y., assignors to Burroughs Wellcome Co.

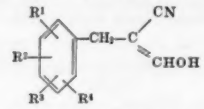
No Drawing. Original application Mar. 4, 1970, Ser. No. 16,606, now Patent No. 3,697,512, dated Oct. 10, 1972. Divided and this application June 12, 1972, Ser. No. 263,452

Claims priority, application Great Britain, Mar. 6, 1969, 11,908/69, 11,909/69; May 16, 1969, 25,171/69; June 13, 1969, 30,247/69

Int. Cl. C07c *121/66*

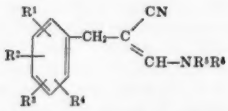
U.S. Cl. 260—465 F **8 Claims**

1. In the method of preparing a compound of formula I



(I)

which comprises treating with an acid a partially aqueous solution of a compound of formula II



wherein R^1–R^4 are the same or different, and each is a hydrogen or halogen atom, lower alkyl, lower alkoxy or benzyloxy, or R^3 and R^4 taken together may be a methylenedioxy group when R^1 and R^2 are hydrogen atoms and wherein R^5 is lower alkyl and R^6 is lower alkyl or hydrogen or NR^5R^6 is cyclic amino group of not less than one carbon atom or more than twelve carbon atoms.

3,849,471
PROCESS FOR REACTING WEAK ACIDS WITH CHLOROALKYL SUBSTITUTED SILICON COMPOUNDS

George M. Omietanski and Herbert E. Petty, Marietta, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 14, 1972, Ser. No. 314,978

Int. Cl. C07f *7/08, 7/10, 7/18*

U.S. Cl. 260—448.2 E **8 Claims**

1. The process which comprises reacting in the liquid phase a weak acid having a dissociation constant, determined as the negative log thereof, ranging from as low as about 2 to as high as about 13, determined in water at 25° C. with a chloroalkyl substituted silicon compound in the presence of ethylene diamine.

3,849,472
PROCESS FOR PREPARING 3-PENTENENITRILE

Dhafir Yusuf Waddan, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 9, 1973, Ser. No. 377,183

Claims priority, application Great Britain, July 31, 1972, 35,639/72

Int. Cl. C07c *121/04*

U.S. Cl. 260—465.3 **6 Claims**

1. A process for the manufacture of 3-pentenenitrile which comprises reacting at a temperature within the range −25° C. to 200° C. a mixture of butadiene, hydrogen cyanide and, as sole catalyst, a complex of cuprous chloride, bromide or iodide with an organic nitrile selected from 3-pentenenitrile and compounds having nitrile groups attached to a saturated or ethylenically unsaturated hydrocarbon residue containing up to three carbon atoms, the said catalyst being used in the amount of 0.0005 to 0.1 mole per mole of butadiene, the molar ratio of butadiene to hydrogen cyanide being 2:1 to 1:4, and the catalyst complex being formed by mixing the said cuprous salt with the said organic nitrile before or at the same time as it is mixed with the butadiene and hydrogen cyanide.

3,849,473
DIESTERS OF 1,3 - BIS(CARBOXYMETHYL) ADAMANTANES AND PROCESS FOR PREPARING SAME

Yoshiaki Inamoto and Hirokazu Nakayama, Wakayama, Hidetsugu Takenaka, Arita, and Yoshitomo Kimura, Naga-gun, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

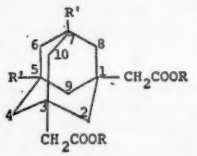
No Drawing. Filed June 23, 1971, Ser. No. 156,114

Claims priority, application Japan, June 24, 1970, 45/54,979

Int. Cl. C07c *69/74*

U.S. Cl. 260—468 G **2 Claims**

1. A compound of the formula



wherein

R is selected from the group consisting of crotyl, oleyl, linoleyl and methallyl, and

R′ is H or alkyl having 1 to 4 carbon atoms.

3,849,474
11-DEOXYPROSTAGLANDIN DERIVATIVES AND PROCESS THEREFOR

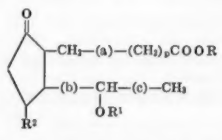
Nedumparambil A. Abraham, Dollard des Ormeaux, Jehan F. Bagli, Kirkland, and Tibor Bogri, Montreal, Quebec, Canada, assignors to Ayerst, McKenna and Harrison Limited, Ville St. Laurent, Quebec, Canada

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,650

Int. Cl. C07c *11/36*

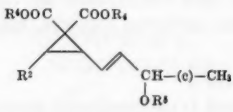
U.S. Cl. 260—468 D **10 Claims**

1. A process for preparing a compound of formula I



I

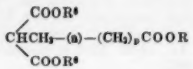
in which (a) is CH_2CH_2, *cis* CH=CH or C≡C, *p* is an integer from 2 to 4, (b) is *trans* CH=CH, (c) is either $(CH_2)_q$ wherein *q* is an integer from 1 to 6 or *cis* $CH_2CH{=}CH(CH_2)_r$, wherein *r* is an integer from 0 to 3, R and R^1 is each hydrogen and R^2 is hydrogen, lower alkyl or CH_2OR^3 wherein R^3 is hydrogen which comprises subjecting a compound of formula II



II

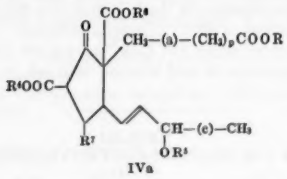
in which R^2 is hydrogen, lower alkyl or CH_2OR^3 in which R^3 is lower alkanoyl, R^4 is lower alkyl, R^5 is hydrogen or tetrahydropyran-2-yl and (c) is as defined herein to a base catalyzed condensation at a temperature of 100° to 150° C. for 30 minutes to three hours in the presence of, as the base, an alkali metal alkoxide or an alkali metal

hydroxide with approximately an equimolar amount of a triester of formula III

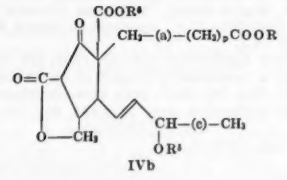


III

in which R and R^6 are lower alkyl and (a) and *p* are as defined herein to yield the corresponding cyclopentanonetriester selected from the group consisting of formula IVa and formula IVb



IVa



IVb

in which (a), (c), *p*, R^4, R^5 and R^6 are as defined herein, R is lower alkyl and R^7 is hydrogen or lower alkyl, said cyclopentanonetriester of formula IVa being obtained when R^2 of the compound of formula II is hydrogen or lower alkyl and said cyclopentanonetriester of formula IVb being obtained when R^2 of the compound of formula II is CH_2OR^3 in which R^3 is lower alkanoyl; in the instance when R^5 of the cyclopentanonetriester is tetrahydropyran-2-yl subjecting the cyclopentanonetriester to treatment with an acid in an inert solvent in the presence of water to remove the tetrahydropyran-2-yl protecting group to obtain the corresponding cyclopentanonetriester in which R^5 is hydrogen, and thereafter treating the instant cyclopentanonetriester intermediate with an alkali metal hydroxide to give the corresponding compound of formula I in which R and R^1 are hydrogen and R^2 is hydrogen, lower alkyl or CH_2OR^3 wherein R^3 is hydrogen.

3,849,475

PURIFICATION OF HIGH BOILING ESTERS

Paul Biarnais, Melle, Claude Falize, Neuilly-sur-Seine, and Gilbert Sitaud, Melle, France, assignors to Rhone-Progil, Courbevoie, France

Filed Apr. 26, 1972, Ser. No. 247,592
Claims priority, application France, Apr. 26, 1971, 7115732
Int. Cl. C07c *69/80*
U.S. Cl. 260—475 B **17 Claims**

1. In a process for purification of high boiling esters produced by esterification of an aromatic or aliphatic organic mono or poly carboxylic acid or its anhydride having 6 or more carbon atoms by an aliphatic monohydric or polyhydric alcohol having at least 8 carbon atoms, in the presence of an esterification catalyst, followed by neutralization of the reaction product, heating to 130–190° C. and decantation of the latter to separate therefrom an organic phase and an aqueous phase, the improvement which comprises performing the decantation step under positive pressure at a temperature within the range of 120–200° C.

3,849,476

PROCESS FOR MANUFACTURING 6-NITRO-2-SUBSTITUTED HEXANOIC ACID ESTERS

Ryoji Kikumoto, Kanagawa-ken, Japan, assignor to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed May 22, 1969, Ser. No. 826,828
Claims priority, application Japan, May 25, 1968, 43/35,335; Nov. 13, 1968, 43/82,526
Int. Cl. C07c *131/00, 79/40*
U.S. Cl. 260—478 **6 Claims**

1. A process for manufacturing a 6-nitro-2-substituted hexanoic acid ester which comprises reacting an alicyclic compound of the group consisting of 2-nitro-6-oximino-1-cyclohexene-1-ol, 2,6-dinitrocyclohexanone, and a monoalkali metal salt of said 2,6-dinitrocyclohexanone with a lower alkanol and a substance which consists essentially of an effective amount of a basic catalyst until an ester of said alkanol with a 6-nitro-2-substituted hexanoic acid is obtained, the 2-substituent of said acid being oximino if said alicyclic compound is 2-nitro-6-oximino-1-cyclohexene-1-ol, and the 2-substituent of said acid being nitro if said alicyclic compound is 2,6-dinitrocyclohexanone or said mono-alkali metal salt thereof.

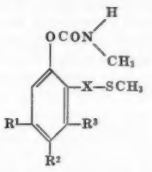
3,849,477

THIOALKYLPHENYL CARBAMATES

Edward D. Weil, Lewiston, and Hans L. Schlichting, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation of application Ser. No. 612,064, Dec. 1, 1966, which is a division of application Ser. No. 262,376, Mar. 4, 1963, now Patent No. 3,331,894. This application May 13, 1969, Ser. No. 826,076
Int. Cl. C07c *149/42*
U.S. Cl. 260—479 C **2 Claims**

1. A compound of the formula



wherein X is 1-(methoxymethyl)-1,3-propylene and R^1, R^2 and R^3 are independently selected from the group consisting of hydrogen and lower alkyl.

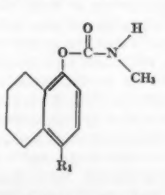
3,849,478

TETRAHYDRO-1-NAPHTHYL-N-METHYL-CARBAMATES

Linwood K. Payne, Jr., deceased, late of Charleston, W. Va., by Betty Lou B. Payne, executrix, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed May 10, 1972, Ser. No. 252,329
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C **4 Claims**

1. A compound of the formula:



wherein R_1 is formamido, lower alkanoylamido, phenylcarboxamido lower alkylideneimino, dilower alkylamino

lower alkyleneimino, lower alkylureido, dilower alkylureido, lower phenylalkoxy, lower alkylthio, lower phenylalkylthio, lower alkyl sulfinyl or lower alkyl sufonyl.

3,849,479
DIMETHYL DIAMINOMALEATE

Robert Walter Begland, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,541
Int. Cl. C07d *97/02*
U.S. Cl. 260—482 P **5 Claims**

1. A compound of the group consisting of dimethyl diaminomaleate hydrochloride dimethyl diaminomaleate.

3,849,480
CATALYTIC ASYMMETRIC HYDROGENATION

William S. Knowles and M. Jerome Sabacky, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation of abandoned application Ser. No. 758,603, Sept. 9, 1968. This application Aug. 20, 1971, Ser. No. 173,620
Int. Cl. C07b *1/00*
U.S. Cl. 260—490 **15 Claims**

1. A process for the asymmetric hydrogenation of an olefin which comprises the hydrogenation of an olefin of the formula

wherein R^1, R^2, R^3 and R^4 are each independently selected from the group consisting of hydrogen; alkyl having at least one and a maximum of 12 carbon atoms; substituted alkyl said substitution being selected from the group consisting of amino, hydroxy, nitro, thio, carbonyl, carboxyl, carboxylic ester, said ester group having a maximum of 6 carbon atoms; phenyl; substituted phenyl, said substitution being selected from the group consisting of alkyl having a maximum of 4 carbon atoms, amino, carboxyl, nitro and carboxylic ester, said ester having a maximum of 4 carbon atoms, and said substitution being less than 3 substituents; amino; dibenzylamino; benzylamino; nitro; carboxyl and carboxylic ester, said ester having a maximum of 4 carbon atoms, provided that, upon hydrogenation,

(a) the olefin is capable of forming a racemic mixture, and

(b) at least one of the carbon atoms united by the olefinic bond is capable of forming an asymmetric carbon,

in the presence of a catalyst represented by the formula

$$M^1X_nL_3$$

wherein M^1 is a metal selected from the group consisting of rhodium, ruthenium and iridium; X is selected from the group consisting of hydrogen, chlorine, fluorine, bromine and iodine; each L is independently selected from the group $AR^5R^6R^7$, wherein A is selected from the group consisting of phosphorus and arsenic and R^5, R^6 and R^7 are each independently selected from the group consisting of hydrogen; alkyl having at least one carbon atom and a maximum of 12 carbon atoms; substituted alkyl, said substitution selected from the group consisting of amino, carbonyl, phenyl, nitro and alkoxy, said alkoxy having a maximum of 4 carbon atoms; phenyl; substituted phenyl, said substitution selected from the group consisting of alkyl having a maximum of 4 carbon atoms, amino and nitro, said substitution being less than 3 substituents; cycloalkyl having at least 3 carbon atoms and a maximum of 6 carbon atoms; pyrryl; thienyl; furyl; pyridyl and piperidyl, provided that at least one L group is optically active and *n* is one of the integers one or three.

3,849,481
HYDROGENATION OF LYSINE PRECURSORS

Robert Fuhrmann, Morris Plains, Fred W. Koff, Clifton, and John Pisanchyn, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 97,290, Dec. 11, 1970. This application Dec. 29, 1971, Ser. No. 215,962
Int. Cl. C07c *103/18*
U.S. Cl. 260—501.17 **7 Claims**

1. A process for the catalytic reduction of 2-oximino-6-nitrohexanamide to produce an alkanoic acid salt of D,L-lysine amide, comprising: subjecting 2-oximino-6-nitrohexanamide, an alkanoic acid containing 1–5 carbon atoms and hydrogen in the presence of a rhodium metal hydrogenation catalyst, to superatmospheric pressure, at a temperature above 15° C. to convert the 2-oximino-6-nitrohexanamide to said alkanoic acid salt of D,L-lysine amide.

3,849,482
AMINE SALTS OF CIS-PROPENYLPHOSPHONIC ACID

Burton G. Christensen, Scotch Plains, N.J., William J. Leanza, Staten Island, N.Y., and Thomas R. Beattie, North Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application May 15, 1968, Ser. No. 729,420, which is a continuation-in-part of application Ser. No. 679,203, Oct. 30, 1967, both now abandoned. Divided and this application Apr. 19, 1971, Ser. No. 135,396
Int. Cl. C07f *9/38*
U.S. Cl. 260—501.21 **3 Claims**

1. An amine salt of *cis*-propenylphosphonic acid wherein the amine is selected from the group consisting of α-phenethylamine, diethylamine, diethylene diamine, quinine, brucine, lysine, arginine, procaine, ethanolamine, morphine, benzylamine, ethylenediamine, N,N′-dibenzylethylenediamine, diethanolamine, piperazine, N-aminoethylpiperazine, dimethylaminoethanol, 2-amino-2-methyl-1-propanol, theophylline, and N-methylglucamine.

3,849,483
TRISODIUM-MONOANILINE SALT OF 2-NAPHTHOL-3,6-DISULFONIC ACID

Martin Louis Feldman, East Brunswick, Donald William Hagedorn, Roxbury Township, and John Edson Gordon, Bridgewater Township, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Oct. 6, 1972, Ser. No. 295,756. Divided and this application Feb. 7, 1974, Ser. No. 440,420
Int. Cl. C07c *143/42*
U.S. Cl. 260—501.21 **1 Claim**

1. The trisodium-monoaniline salt of 2-naphthol-3,6-disulfonic acid.

3,849,484
PROCESS FOR THE PRODUCTION OF PERCARBOXYLIC ACID

Peter Hoffmann and Gerd Schreyer, Grossauheim, Otto Weiberg, Neu Isenburg, and Wolfgang Weigert, Offenbach, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed May 11, 1972, Ser. No. 252,194
Claims priority, application Germany, May 21, 1971, P 21 25 160.5
Int. Cl. C07c *73/10*
U.S. Cl. 260—502 R **13 Claims**

1. In a process for the production of a percarboxylic acid by reacting hydrogen peroxide with a member of the group consisting of alkanoic acids having 2 to 5 carbon atoms and alkyl esters thereof having 1 to 5 carbon atoms in the alkyl group the improvement comprising carrying out the reaction in the gaseous phase at a temperature of

60 to 138° C. at a pressure from 20 Torr to normal pressure in the presence of a solid acid catalyst selected from the group consisting of ammonium sulfate, an alkali metal acid sulfate, barium nitrate, calcium nitrate, magnesium nitrate, aluminum phosphate, aluminum sulfate and boron phosphate.

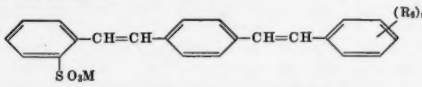
3,849,485

STYRYLBENZENE DERIVATIVES, THEIR MANUFACTURE AND USE

Kurt Weber, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed June 1, 1970, Ser. No. 42,598
Claims priority, application Switzerland, June 5, 1969, 8,652/69
Int. Cl. C07c *123/24*
U.S. Cl. 260—505 R **2 Claims**

1. New di-styrylbenzene derivatives which correspond to the formula



wherein R_6 represents chlorine or a methyl group, *m* denotes the numbers 1 or 2 and M represents a hydrogen, alkali, alkaline earth, or ammonium ion.

3,849,486

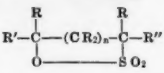
PROCESS OF CONVERTING SULTONES TO HYDROXYALKYLSULFONATES

Gerhard O. Kuehnhanss, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed May 3, 1973, Ser. No. 356,907
Int. Cl. C07c *143/02*
U.S. Cl. 260—513 R **10 Claims**

1. A process for converting sultones into hydroxy alkane sulfonic acid salts in high purity and high yield which comprises

reacting a sultone of the formula:



wherein:

R, R′ and R″ are hydrogen or alkyl, *n* is an integer of 0, 1, 2, or 3, the total number of carbon atoms in the sultone molecule is from about 6 to about 40,

with alkali metal hydroxide or alkaline earth metal hydroxide, in an anhydrous system, at a temperature of from about 75 to about 250° C., the hydroxide and sultone being used in a ratio of from about 1.1 to about 25 mols of alkali metal hydroxide, or from about 0.55 to about 12.5 mols of alkaline earth metal hydroxide, per mol of sultone.

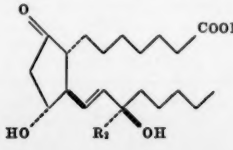
3,849,487

NATURAL 15-METHYL AND ETHYL-15-EPI-PGE$_1$

Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 37,307, May 14, 1970. This application July 24, 1972, Ser. No. 274,643
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—514 D **2 Claims**

1. An optically active compound of the formula:



wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, or a pharmacologically acceptable cation, and wherein R_2 is methyl or ethyl.

3,849,488

ISOLATION AND PURIFICATION OF 3,4-DIHYDROXY PHENYLALANINE

Max Brenner, Spiegelbergstrasse 33, Basel, Switzerland

Filed Aug. 27, 1971, Ser. No. 175,520
Claims priority, application Switzerland, Aug. 27, 1970, 12,866/70
Int. Cl. C07c *101/72*
U.S. Cl. 260—519 **29 Claims**

1. A process for preparing pure 3,4-dihydroxy phenylalanine from an impure substance or from a mixture containing the said substance, characterized in that (1) the starting material is treated with an approximately equimolecular quantity of a lead salt in the presence of water, which lead salt is either a lead salt insoluble or slightly soluble in water, or a lead salt soluble in water, (2) the pH of the reaction mixture is brought to and maintained between 5 and 8 by means of a base, (3) the mother liquor is separated and the complex of 3,4-dihydroxy phenylalanine and lead, which is precipitated, is washed, the mother liquor and the washing waters being eliminated, (4*b*) the complex is decomposed by a diluted aqueous solution of an acid forming a lead salt soluble in water, employed in such a quantity and such a concentration that the resulting pH is between 2 and 5, (5*b*) the substance which precipitates and crystallizes is separated and washed and it consists of pure 3,4-dihydroxy phenylalanine while the soltuion and the washing waters contain a lead salt and (8) are recycled to stage (1) as an additional source of starting materials.

3,849,489

PURIFICATION OF TEREPHTHALIC ACID

Henryk S. Rudzki, 56 Via Capo le Case, Rome, Italy

Filed Jan. 21, 1971, Ser. No. 108,515
Int. Cl. C07c *51/42, 63/26*
U.S. Cl. 260—525 **3 Claims**

1. A process for the purification of impure terephthalic acid which comprises:

forming a first solution of ammonium terephthalate by contacting terephthalic acid to be purified with ammonia water containing from about 10 to about 35% by weight ammonia at a temperature of at least 10° C. and not in excess of 100° C. in an amount in excess of at least 150% of a stoichiometric quantity of ammonia needed to react with said terephthalic acid and in an amount necessary to form an unsaturated solution containing from 10 to 17% by weight reacted terephthalic acid so as to react said terephthalic acid with said ammonia to form ammonium terephthalate in an aqueous unsaturated solution,

separating ammonium terephthalate from the remainder of said solution,

decomposing said ammonium terephthalate to form a partially purified terephthalic acid product by heating said ammonium terephthalate at a temperature of at least about 275° C. at which impurities in said ammonium terephthalate are volatile and at a temperature at which said ammonium terephthalate decomposes to produce terephthalic acid, but at a temperature below about 300° C. so as to avoid sublimation of terephthalic acid,

forming a further solution of ammonium terephthalate by contacting said partially purified terephthalic acid with ammonia water containing from about 10 to about 35% by weight ammonia at a temperature of at least 10° C. and not in excess of 100° C. in an amount in excess of at least 150% of a stoichiometric quantity of ammonia needed to react with said terephthalic acid and in an amount necessary to form

an unsaturated solution containing from 10 to 17% by weight reacted terephthalic acid so as to react said partially purified terephthalic acid with said ammonia to form ammonium terephthalate in an aqueous unsaturated solution,

separating said ammonium terephthalate from said further solution, and

decomposing said ammonium terephthalate to produce terephthalic acid by heating said ammonium terephthalate at a temperaure of at least 275° C. at which impurities in said ammonium terephthalate decompose to produce terephthalic acid, but at a temperature below 300° C. so as to avoid the sublimation of said ammonium terephthalate,

one of said separating steps and the decomposing step immediately following it being carried out by heating the solution treated during such step at its boiling point so as to separate said ammonium terephthalate, volatizing the remainder of said solution being separated and further heating the ammonium terephthalate so separated so as to decompose the same, and

the other of said separating steps being carried out by contacting the solution treated during such step with ammonia gas until ammonium terephthalate is precipitated and physically removing the precipitated ammonium terephthalate from the solution from which it is precipitated.

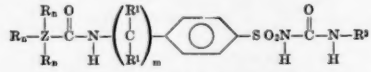
3,849,490

CYCLOHEXADIENYLAMIDOALKYLPHENYL-SULFONYL UREAS

Berthold Richard Vogt, North Brunswick, Jack Bernstein, New Brunswick, and Frank Lee Weisenborn, Somerset, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed May 18, 1971, Ser. No. 144,678
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 DA **12 Claims**

1. A compound of the formula



wherein R is lower alkyl, lower alkoxy or halogen; *n* is 0 or 1; R^1 is H or alkyl of from 1 to 3 carbon atoms; *m* is 1, 2 or 3; Z is a cyclohexadienyl radical or a cyclohexadienyl radical which is mono- di- or tri-substituted by R; and R^2 is cycloalkyl or cycloalkene of from 5 to 8 carbon atoms or alkyl-substituted cycloalkyl or cycloalkene wherein the alkyl radical has from 1 to 3 carbon atoms.

3,849,491

PROCESS OF DEHALOGENATION AND DEHALOGENATION WITH SIMULTANEOUS REDUCTION OF 11a - HALO - 6 - DEOXY - 6 - DEMETHYL-6-METHYLENETETRACYCLINES BY HYDRAZINE

Ivan Villax, 1 Trevessa do Ferreiro, Lisbon 3, Portugal

No Drawing. Filed July 2, 1971, Ser. No. 159,458
Claims priority, application Portugal, July 3, 1970, 54,106, 54,107, 54,108
Int. Cl. C07c *103/19*
U.S. Cl. 260—559 AT **5 Claims**

1. A process of dehalogenation and simultaneous dehalogenation and reduction of C6- of a 11a-chloro-6-deoxy-6-demethyl-6-methylenetetracycline, wherein the 11a-chloro derivative is dehalogenated at C11a- by equimolecular amounts of hydrazine to yield the respective 6-deoxy-6-demethyl-6-methylenetetracyclines, and simultaneously dehalogenated at 11a- and reduced at C6- by at least two equimolecular amounts of hydrazine to yield the respective 6-deoxytetracyclines, in the presence of catalytic amounts of a noble metal catalyst selected from the group consisting of palladium, platinum, and rhodium in an inert reaction medium, and the compounds thus formed are recovered subsequently from the reaction mixture.

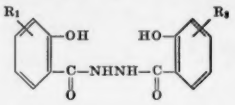
3,849,492

BIS-SALICYLOYL-HYDRAZINES

Heimo Brunetti, Reinach, Kurt Schwarzenbach, Aesch, and Andreas Schmidt, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,393
Claims priority, application Switzerland, Oct. 8, 1970, 14,967/70; Aug. 16, 1971, 11,997/71
Int. Cl. C07c *109/10*
U.S. Cl. 260—559 H **2 Claims**

1. A compound of the formula



wherein

R_1 and R_3 independently of one another are a member selected from the group consisting of acetoxy, propionyloxy, butyryloxy, isobutyryloxy, valeryloxy, caproyloxy, 2-ethylcaproyloxy, lauryloxy, capryloxy, myristyloxy, palmityloxy, stearyloxy, acrylyloxy, methacrylyloxy, crotonyloxy, isocrotonyloxy, oleoyloxy, benzoyloxy, and phenylacetoxy.

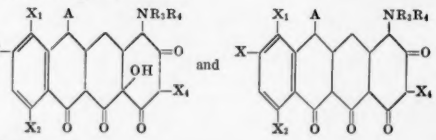
3,849,493

D-RING SUBSTITUTED 6-DEOXYTETRACYCLINES

Lloyd H. Conover, Barham, near Canterbury, England, and Robert B. Woodward, Belmont, Mass., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Application Oct. 31, 1969, Ser. No. 873,077, now Patent No. 3,697,552, which is a division of application Ser. No. 569,052, Aug. 1, 1966, now Patent No. 3,509,184, which is a continuation-in-part of application Ser. No. 209,269, July 11, 1962, which in turn is a continuation-in-part of application Ser. No. 132,304, Aug. 18, 1961, both now abandoned. Divided and this application Mar. 7, 1972, Ser. No. 232,609
Int. Cl. C07c *103/19*
U.S. Cl. 260—559 AT **6 Claims**

1. A compound selected from the group consisting of those having the formulae



wherein

X is selected from the group consisting of amino, monolower alkylamino, alkanoylamino having 2 to 4 carbon atoms, lower alkyl and lower alkoxy;

X_1 is selected from the group consisting of hydrogen and chloro;

X_2 is selected from the group consisting of hydroxy and lower alkoxy;

A is selected from the group consisting of hydrogen and lower alkyl;

R_3 and R_4 when taken together with the nitrogen atom to which they are attached form a nitrogen heterocyclic ring selected from the group consisting of piperazino, piperidino, morpholino, pyrrolo, thiomorpholino, pyrrolidino and 2-(lower carbalkoxy)pyrrolidino;

R_3 and R_4 when taken separately are each selected from the group consisting of hydrogen, alkanoyl having 1 to 4 carbon atoms, and CH_2B_1 wherein B_1 is selected from the group consisting of hydrogen, lower alkyl and mono-substituted lower alkyl, said substituent being selected from the group consisting of hydroxy and lower

alkoxy; provided that only one of said R_3 and R_4 substituents is selected from the group consisting of alkanoyl having 1 to 4 carbon atoms;

X_4 is selected from the group consisting of cyano and

wherein R_6 is selected from the group consisting of hydrogen and lower alkyl.

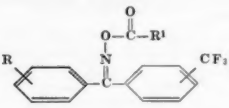
3,849,494

TRIFLUOROMETHYLBENZOPHENONE O-ACYLOXIMES USEFUL AS CROP YIELD INCREASERS FOR PLANTS

William Joseph Middleton, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 18, 1973, Ser. No. 324,878
Int. Cl. C07c *131/00*
U.S. Cl. 260—566 AE 8 Claims

1. A compound of the formula



R is H, methyl, trifluoromethyl or methoxy; and wherein

R^1 is phenyl, alkyl or haloalkyl of up to 11 carbon atoms.

3,849,495

REDUCING PRIMARY ARYLAMINE IMPURITIES IN DIARYLAMINES

Norman Gunning Bromby, Hexagon House, Blackley, Manchester, England

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,581
Int. Cl. C07c *85/16*
U.S. Cl. 260—576 4 Claims

1. A process for reducing, in a diarylamine selected from the group consisting of diphenylamine, diphenyl-p-phenylenediamine, di-β-naphthyl - p - phenylenediamine, phenyl-β-naphthylamine and phenyl-α-naphthylamine, the amount of corresponding primary arylamine present therein as an impurity, said process consisting essentially of heating said diarylamine with a member selected from the group consisting of phthalic acid, glutaric acid, succinic acid and a 1:6:3 mixture of adipic, glutaric and succinic acids, and anhydrides of said acids in amounts of 0.25 to 5.0 percent of the weight of said diarylamine so as to react with a major amount of said primary arylamine.

3,849,496

PREPARATION OF AMINES FROM AMINE SALTS

Denis Forster, University City, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 177,489, Sept. 2, 1971. This application June 18, 1973, Ser. No. 371,090
Int. Cl. C07c *85/16*
U.S. Cl. 260—583 N 5 Claims

1. Process for the preparation of amines from amine hydrochlorides which comprises contacting the said amine hydrohalide with an anhydrous high boiling organic solvent having a boiling point in the range of from 50° C. to 350° C., and characterized by a boiling point at least 30° C. higher than the said anhydrous amine, the said contacting being conducted in the presence of an excess of at least 50 wt. percent of ammonia beyond the stoichiometric proportion required to neutralize the aforesaid amine hydrohalide with a resultant formation of two liquid phases, respectively, comprising (a) ammonia and dissolved ammonium halide, and (b) the high boiling solvent containing the free amine, and thereafter separating the said liquid phases.

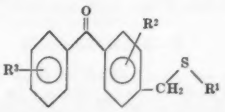
3,849,497

THIOMETHYLATED BENZOPHENONES

Hans-Georg Heine and Hans-Jurgen Rosenkranz, Krefeld, and Hans Rudolph, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 2, 1972, Ser. No. 303,121
Claims priority, application Germany, Nov. 5, 1971, P 21 55 000.5
Int. Cl. C07c *49/80, 49/82*
U.S. Cl. 260—591 1 Claim

1. Thiomethylated benzophenones of the formula



wherein R^1 is phenyl, naphthyl, benzyl, phenethyl or one of said radicals substituted by alkyl having 1 to 5 carbon atoms, chlorine, bromine, methoxy or ethoxy; R^2 is hydrogen or alkyl having 1 to 5 carbon atoms and R^3 is hydrogen, methoxy, ethoxy, methyl or $—CH_2—SR^1$.

3,849,498

METHOD OF PREVENTING THE POLYMERIZATION OF UNSATURATED ALDEHYDE

Ryozi Sato, Takaoka, and Yasuyoshi Chino, Tokyo, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 22, 1971, Ser. No. 211,106
Claims priority, application Japan, Dec. 26, 1970, 45/119,037
Int. Cl. C07c *47/20, 47/22*
U.S. Cl. 260—601 R 6 Claims

1. A stabilized solution consisting essentially of an alkanol solution of an aldehyde monomer selected from the group consisting of acrolein and methacrolein, said alkanol having 1 to 8 carbon atoms and from 0.001 to 1% by weight, based on the weight of said monomer, of a hydroxylamine compound selected from the group consisting of N-alkylhydroxylamine having from 1 to 8 carbon atoms in the alkyl group, N,N-dialkylhydroxylamine having from 1 to 8 carbon atoms in each alkyl group and N,N-dicyclohexylhydroxylamine.

3,849,499

METHOD FOR PREPARING SULFOXIDES AND SULFONES

Alexandr Dmitrievich Malievsky, Malaya Dorogomilovskaya ulitsa 14, kv. 34; Viktor Vladimirovich Vints, Sumskaya ulitsa 6, korpus 4, kv. 116; Nikolai Markovich Emanuel, Vorobievskoe shosse 2"b", kv. 44; and Viktor Nikolaevich Parfenov, Uchinskaya ulitsa 1a, kv. 58, all of Moscow, U.S.S.R.

No Drawing. Filed May 17, 1972, Ser. No. 254,238
Int. Cl. C07c *147/00*
U.S. Cl. 260—607 A 5 Claims

1. A method for preparing a dialkyl sulfoxide or sulfone having 1 to 6 carbon atoms in each alkyl group comprising oxidizing a dialkyl sulfide or sulfoxide having 1 to 6 carbon atoms in each alkyl group with atmospheric oxygen in the presence of a readily oxidizable compound selected from the group consisting of acetaldehyde, propionaldehyde and methyl ethyl ketone at a room temperature of from 20° to 130° C. and isolating the resultant product.

3,849,500

WITHDRAWN

3,849,501

PROCESS FOR CONVERTING ETHOXYLATED ALKYL MERCAPTANS TO THEIR OIL SOLUBLE FORM USING ALKYLATED PHENOLS

Frederic C. McCoy, 48 W. Willow St., Beacon, N.Y. 12508

No Drawing. Original application Dec. 27, 1968, Ser. No. 787,567. Divided and this application Dec. 13, 1971, Ser. No. 207,621

Int. Cl. C07c *149/36*

U.S. Cl. 260—609 F **3 Claims**

1. A process for converting ethoxylated alkyl mercaptan substrates normally being insoluble in a 0.10% by weight solution of mineral oil at 75° F. to 80° F., to their oil soluble form, said substrates being of the formula:

$$R—S(CH_2CH_2O)_nH$$

wherein R is an alkyl radical of from 2 to 22 carbon atoms and $n=1$ to 30, by the process of:

(a) admixing each part by weight portion of said substrate to be solubilized, with

(b) a two to eight parts by weight of alkylated phenol, wherein the alkylating groups contain from 9 to 16 carbon atoms, at temperatures up to 175° F., until said oil-soluble form is produced.

3,849,502

HYDROXYLATION OF AROMATIC COMPOUNDS

Francois Bourdin and Michel Costantini, Lyon, Michel Jouffret, Francheville-le-Bas, and Guy Lartigau, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

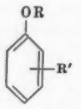
No Drawing. Filed Dec. 23, 1970, Ser. No. 101,149

Claims priority, application France, Dec. 30, 1969, 6945467

Int. Cl. C07c *37/00*

U.S. Cl. 260—613 D **7 Claims**

1. Process for hydroxylating an aromatic compound of the general formula:



in which R and R', which are identical or different, each represent a hydrogen atom or an alkyl radical having 1 to 4 carbon atoms, wherein the aromatic compound is treated

at 20–150° C. with hydrogen peroxide in an amount such that the molecular ratio of hydrogen peroxide to the aromatic compound is below 0.3:1,

in the substantial absence of metal ions and in the presence of a catalytic amount of a strong acid having a pK H_2O value below —0.1 and which is stable to oxidation by hydrogen peroxide, the amounts of hydrogen peroxide and strong acid being such that the ratio of the amount of acid, expressed in proton equivalents, to the number of molecules of hydrogen peroxide taking part in the reaction is 1×10^{-4}:1 to 1:1, the content of water in the reaction medium being initially below 20% by weight of the aromatic compound/water/hydrogen peroxide mixture, and

wherein the hydroxylation is carried out in the presence of a complexing agent selected from the groups consisting of a phosphoric acid, an alkyl acid phosphate, a cycloalkyl acid phosphate and a benzyl acid phosphate.

3,849,503

DIPHENYLETHERS HAVING HERBICIDAL PROPERTIES

Itaru Shigehara, Kusatsu, Ryuyo Nishiyama, Kyoto, and Ryohei Takahashi, Kanichi Fujikawa, Tadaaki Toki, Hidetoshi Takagi, Rikuo Nasu, Isao Yokomichi, Fumio Kimura, and Shinzo Someya, Kusatsu, Japan, assignors to Ishihara Sangyo Kaisha Ltd., Nishiku, Osaka, Japan

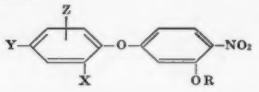
No Drawing. Original application Oct. 14, 1970, Ser. No. 80,807. Divided and this application Dec. 21, 1972, Ser. No. 317,155

Claims priority, application Japan, Oct. 14, 1969, 44/81,971; Apr. 22, 1970, 45/33,793; May 6, 1970, 45/37,902, 45/37,903; June 5, 1970, 45/47,929

Int. Cl. C07c *43/20*

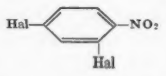
U.S. Cl. 260—613 R **6 Claims**

1. A process for producing a diphenylether having the general formula:



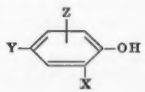
(I)

wherein X represents a halogen atom or a methyl radical in the 2-position; Y represents a halogen atom or an alkyl radical having up to 3 carbon atoms in the 4-position; Z represents hydrogen or halogen in the 5- and 6-positions, wherein both the 5- and 6-positions may be hydrogen, but only one of the 5- or 6-positions may be halogen; and R represents a saturated or an unsaturated hydrocarbon having up to 3 carbon atoms, methoxyethyl or an ethoxyethyl radical, which comprises reacting in the presence of an alkali metal hydroxide or carbonate a 2,4-dihalonitrobenzene having the general formula:



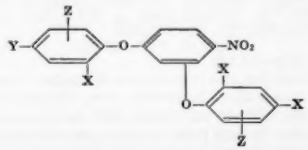
(II)

wherein Hal is a halogen atom, with a substituted phenol having the general formula:



(III)

wherein the molar ratio of the phenol to the 2,4-dihalonitrobenzene is at least 2:1, at a temperature of from 130° C. to 160° C. to produce a 2,4-bis(substituted phenoxy) nitro benzene having the general formula:



(IV)

then reacting said 2,4-bis(substituted phenoxy) nitrobenzene (IV) in the presence of an alkali metal hydroxide

with an alcohol of the formula ROH wherein R is as defined above at a temperature of 20–100° C. to produce said diphenylether (I) and a substituted phenol (III) and thereafter isolating said diphenylether (I).

3,849,504

PERFLUOROPOLYETHERS AND PROCESS FOR MAKING

Ronald A. Mitsch, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 622,099, Mar. 10, 1967. This application Sept. 27, 1968, Ser. No. 763,357

Int. Cl. C07c *43/12;* **C08g** *22/04*

U.S. Cl. 260—615 BF **1 Claim**

1. Polyperfluoroalkylene oxides having molecular weights in the range of 500 to 15,000, carbon-to-oxygen backbone ratios from 2:1 to 20:1, an average of 2.1 to 5 methylol end groups, and backbones consisting of repeating units of the structure

$$\{C_mF_{2m}\}O\{C_nF_{2n}\} \qquad I$$

where m and n are integers of 1 to 7, and one or more randomly distributed branched units of the structure

$$\begin{array}{l} -CF- \\ \quad | \\ \quad O-R- \end{array} \qquad II$$

where R is a side chain made of the repeating units of said structure I.

3,849,505

BICYCLIC POLYOLS

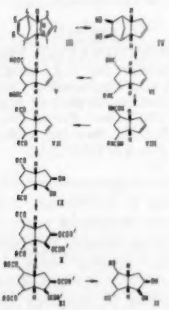
Stephen Turner, Swanland, England, assignor to Reckitt & Colman Products Limited, Hull, Yorkshire, England

Filed Sept. 12, 1972, Ser. No. 288,385

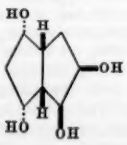
Claims priority, application Great Britain, Sept. 24, 1971, 44,758/71

Int. Cl. C07c *35/22*

U.S. Cl. 260—617 F **1 Claim**



1. A racemic compound having the formula



II

3,849,506

1,2-DIMETHYL CYCLOOCTADIENE-1,5

Gunther Wilke and Paul Heimbach, Mulheim (Ruhr), Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim (Ruhr), Germany

No Drawing. Division of applications Ser. No. 843,220, July 18, 1969, now Patent No. 3,586,727, Ser. No. 845,901, July 29, 1969, now Patent No. 3,629,347, and Ser. No. 845,904, July 29, 1969, now abandoned, of which each in turn is a continuation-in-part of application Ser. No. 532,900, Mar. 9, 1966, application Ser. No. 104,221, Apr. 20, 1961, now abandoned, application Ser. No. 76,520, Dec. 19, 1960, now abandoned, application Ser. No. 203,753 June 20, 1962, now abandoned, and application Ser. No. 582,775, Sept. 27, 1966, now abandoned. Divided and this application Jan. 26, 1971, Ser. No. 109,949

Claims priority, application Germany, Sept. 29, 1965, St 24,439

Int. Cl. C07c *13/26*

U.S. Cl. 260—666 A **1 Claim**

1. 1,2-dimethyl cyclooctadiene-1,5.

3,849,507

ALKYLATION OF AROMATIC HYDROCARBONS USING A COMPACTED MONTMORILLONITE CLAY CATALYST

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Mar. 2, 1973, Ser. No. 337,371

Int. Cl. C07c *3/52*

U.S. Cl. 260—671 C **7 Claims**

1. A process for the alkylation of an aromatic hydrocarbon which comprises reacting the aromatic hydrocarbon with an acyclic olefin having the formula

$$R-\overset{R}{C}=\overset{R'}{C}-R'$$

wherein R is hydrogen or R′, and R′ is an alkyl radical having from one to six carbon atoms, in the liquid phase in the presence of an alkylation catalyst comprising montmorillonite clay which has been compacted into tablets, each tablet having a crushing strength of from 3 to 15 pounds.

3,849,508

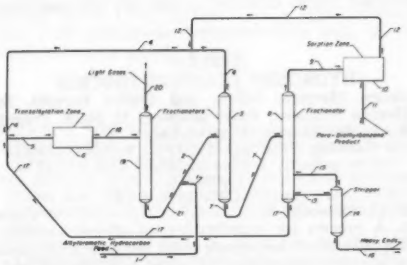
PROCESS FOR PRODUCING PARA-DIETHYLBENZENE

Harry M. Van Tassell, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 10, 1973, Ser. No. 387,395

Int. Cl. C07c *3/62*

U.S. Cl. 260—672 T **9 Claims**



1. A process for producing a para-diethylbenzene product from a hydrocarbon feedstock comprising an alkyl-

aromatic hydrocarbon selected from the group consisting of ethylbenzene, diethylbenzenes, triethylbenzenes, tetraethylbenzenes, pentaethylbenzene and hexaethylbenzens, which comprises the steps of:

(a) admixing with said feedstock at least a portion of a transalkylation zone effluent comprising benzene, ethylbenzene, para-diethylbenzene, meta-diethylbenzene, ortho-diethylbenzene and polyethylbenzenes, said effluent being formed as hereinafter specified, and separating at least a portion of the resulting mixture to provide a low-boiling stream comprising benzene and ethylbenzene, an intermediate-boiling stream comprising para-diethylbenzene, meta-diethylbenzene and orthodiethylbenzene, and a high-boiling stream comprising polyethylbenzenes;

(b) contacting at least a portion of said intermediate-boiling stream with a zeolitic crystalline aluminosilicate sorbent in a sorption zone at sorption conditions to separate paradiethylbenzene from said intermediate-boiling stream and form a para-diethylbenzene-lean stream comprising meta-diethylbenzene and ortho-diethylbenzene, and recovering the resulting separated para-diethylbenzene from said sorption zone as said product;

(c) removing said para-diethylbenzene-lean stream from said sorption zone, contacting at least a portion of said paradiethylbenzene-lean stream, at least a portion of said high-boiling stream and at least a portion of said low-boiling stream with a transalkylation catalyst in a transalkylation zone at transalkylation conditions, and removing from said transalkylation zone said transalkylation zone effluent.

3,849,509

POLYALKENAMERS AND PROCESS FOR THE PREPARATION THEREOF

Roland Streck and Heinrich Weber, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Original application June 11, 1971, Ser. No. 152,374, now Patent No. 3,798,175. Divided and this application June 11, 1973, Ser. No. 368,710

Claims priority, application Germany, June 12, 1970, P 20 28 935.4

Int. Cl. C07c *11/00, 3/60*

U.S. Cl. 260—677 R **17 Claims**

1. A process for the production of polyalkenamers by the catalyzed ring-opening polymerization of cyclic olefins employing a catalyst containing a metal of Subgroups 5 to 7 of the Periodic Table which comprises conducting the polymerization in the presence of an unsaturated carboxylic acid ester wherein the ester group is separated from the double bonded carbon atom by at least one methylene group or the single bonded oxygen atom of the ester group and at least one of the carbon atoms having the double bond has at least one hydrogen atom.

3,849,510

HYDROGEN TRANSFER PROCESS

Federico Maspero, Milan, and Emilio Perrotti, San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., San Donato Milanese, Italy

No Drawing. Filed Oct. 13, 1971, Ser. No. 189,050

Claims priority, application Italy, Oct. 13, 1970, 30,898/70

Int. Cl. C07c *5/02, 5/18*

U.S. Cl. 260—680 R **6 Claims**

1. A process for transforming an olefinic compound into a mixture of compounds which comprise a compound that is the corresponding saturated hydrocarbon and a compound that is the corresponding diolefin, said process comprising passing an olefin over $(Ir(P(C_6H_5)_3)_2)_2$, said process being carried out at a pressure equal to or higher than atmospheric pressure.

3,849,511

OXIDATIVE DEHYDROGENATION WITH MANGANESE FERRITE CATALYST

Harold E. Manning, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Original application Oct. 7, 1970, Ser. No. 78,956, now Patent No. 3,751,385. Divided and this application July 30, 1973, Ser. No. 385,012

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 E **7 Claims**

1. In a process for oxidative dehydrogenation of hydrocarbons having 2 to 12 carbon atoms, at least one

grouping and a boiling point below about 350° C. in vapor phase comprising contacting said hydrocarbons in the presence of oxygen at a temperature of greater than 250° C. with a catalyst wherein the improvement comprises employing as the catalyst a manganese ferrite containing 0.1 to 20 weight percent of carbon black prepared by intimately mixing said carbon black with the precursors of the manganese ferrite and then reacting the precursors to form the manganese ferrite in an atmosphere containing less than 15 mole percent oxygen.

3,849,512

ISOPRENE PREPARED BY THE CATALYTIC DEHYDRATION OF 2-METHYL-2,3-BUTANEDIOL

William G. Bowman, Pasadena, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed Dec. 10, 1970, Ser. No. 96,975

Int. Cl. C07c *1/24*

U.S. Cl. 260—681 **10 Claims**

1. A process for the dehydration of 2-methyl-2,3-butanediol consisting essentially of contacting 2-methyl-2,3-butanediol in the vapor phase with a catalyst at a temperature in the range of 200 to 500° C., said catalyst being thorium oxide and lithium phosphate in which the lithium phosphate has a substantially neutral pH and wherein the thorium oxide and lithium phosphate are maintained separate and distinct from each other, in discrete beds, said 2-methyl-2,3-butanediol contacting said thorium oxide bed first and then subsequently contacting said lithium phosphate.

3,849,513

DISPROPORTIONATION PROCESS

Gerald Doyle, Somerville, N.J., assignor to Exxon Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 862,970, Oct. 1, 1969, now Patent No. 3,686,136. This application June 8, 1972, Ser. No. 260,826

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **15 Claims**

1. A process for the disproportionation of olefins, which comprises contacting a feedstream containing at least one olefinic compound capable of being disproportionated with a catalyst which is prepared by contacting a carbonyl complex having the general formula $R[M(CO)_aX_b]$ wherein R is selected from the group consisting of alkali metal ions and cations of the type J_4Q wherein Q is selected from the group consisting of nitrogen, phosphorous, arsenic, and antimony, and J is selected from the group consisting of hydrogen, hydrocarbyl radicals, and the halogenated and oxygenated derivatives thereof, having up to 30 carbon atoms, M is a Group VI transition metal, X is a uninegatively charged ligand, selected from the group consisting of halide, cyanide, cyanate, thiocyanate, azide, C_1 to C_{20} alkoxide radicals, C_1 to C_{20} carboxylate radicals, and the halogenated derivatives thereof, *a* is an integer from 1 to 5, and *b* is an integer of from 1 to 3, with an activator, said activator comprising a compound selected from the group consisting of

compounds having the general formula r_nLY_m wherein r is independently selected from the group consisting of hydrogen, hydrocarbyl radicals, and the halogenated and oxygenated derivatives thereof, said activator containing up to 30 carbon atoms, L is selected from the group consisting of Group I–A, II–A and III–A metals, said metals having an atomic number of from 3 to 31, Y is a halogen radical, n is an integer of from 1 to 3, and m is an integer of from 0 to 3, n and m having a total equal to the valence of L, at a temperature of from about −100 to +150° C. and a pressure of between 0.1 and 1000 atmospheres, the molar ratio of the activator to carbonyl complex varying between 0.5:1 and 50:1, whereby said olefinic compound is disproportionated.

3,849,514

BLOCK POLYESTER-POLYAMIDE COPOLYMERS

Theodore F. Gray, Jr., and Kenneth R. Barton, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 683,789, Nov. 17, 1967. This application Sept. 5, 1969, Ser. No. 856,907

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 PE **14 Claims**

1. A block polyester-polyamide copolymer terminated with ester or hydroxyester end groups prepared by catalytically reacting the terminal groups of a prepolyamide and a prepolyester by means of an ester interchange reaction:

(A) a prepolyamide, having an inherent viscosity of at least about 0.1 and terminated with hydroxyester or ester end groups, said prepolyamide having been prepared from damine component and a second component selected from the group consisting of:

(1) a molar excess of a diester of a difunctional dicarboxylic acid, and

(2) a dicarboxylic acid and a terminating agent selected from the group consisting of monohydric and dihydric alcohols, wherein said acid is used in a molar amount greater than that for said diamine and wherein said terminating agent is added after the reaction between said diamine and said acid in an amount of one mole per equivalent of excess acid present, and

(B) a prepolyester, having an inherent viscosity of at least about 0.1 and terminated with hydroxy end groups, said prepolyester having been prepared from a difunctional dicarboxylic acid and a molar excess of a difunctional diol,

(C) said block copolymer having being stabilized against randomination in the molten state and having a polyamide content of from about 10–60% by weight of the block copolymer, and an inherent viscosity of at least 0.5.

3,849,515

PROCESS FOR THE PREPARATION OF POLYETHER/POLYESTER BLOCK COPOLYMERS

Erwin Muller, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 23, 1973, Ser. No. 335,266

Claims priority, application Germany, May 7, 1972, P 22 10 839.0

Int. Cl. C08g *39/10*

U.S. Cl. 260—860 **10 Claims**

1. A process for the preparation of polyether/polyester block copolymers which comprises condensing, in the presence of an etherification catalyst at a temperature 130° C.–220° C., hydroxyl saturated polyesters and hydroxyl polyethers each containing free hydroxyl groups, said polyester has a molecular weight of 250–3000 and said polyether has a molecular weight of 500–3000, the molar ratio of polyester to polyether being from about 5:1 to about 1:5.

3,849,516

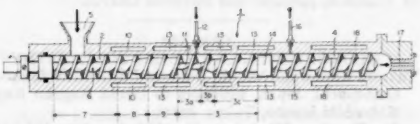
GRAFTED POLYOLEFINS AS STABILIZER COMPONENTS IN POLYOLEFINS

Don A. Plank, Baytown, Tex., assignor to Exxon Research and Engineering Company

Filed Apr. 3, 1972, Ser. No. 240,738

Int. Cl. C08f *29/12*

U.S. Cl. 260—876 R **12 Claims**



1. An oxidatively stabilized composition exhibiting outstanding resistance to oxidative degradation which comprises in combination:

(a) a major portion of a C_2 to C_8 thermoplastic or elastomeric polyolefin constituent having a greater tendency to oxidative degradation than said composition;

(b) at least one conventional antioxidant stabilizer system; and

(c) sufficient C_3 to C_{10} unsaturated carboxylic acid grafted C_3 to C_8 thermoplastic or elastomeric polyolefin additive to incorporate from about .05 to 1.0 weight percent of grafted component into said constituent polyolefin wherein said additive has been prepared by extruder grafting of a base polyolefin and said additive is degraded in molecular weight from said base polyolefin as evidenced by an increase of at least 25% in the MFR of said additive as compared to the MFR of said base polyolefin.

3,849,517

TETRAPOLYMER-TERPOLYMER BLENDS

Tsuneichi Takeshita, 4 Alton Road, Polly Drummond Hill, Newark, Del. 19711

No Drawing. Original application Apr. 15, 1971, Ser. No. 134,448, now abandoned. Divided and this application Apr. 2, 1973, Ser. No. 346,833

Int. Cl. C08f *29/00, 29/02*

U.S. Cl. 260—876 R **6 Claims**

1. A uniform blend of about 15–40 weight percent of the elastomeric tetrapolymer ethylene/C_3–C_{12} alpha-monoolefin/maleic anhydride/and C_6–C_{22} nonconjugated diene with about 60–85 weight percent of the elastomeric terpolymer ethylene/C_3–C_{12} alpha monoolefin/and C_6–C_{22} nonconjugated diene wherein said tetrapolymer and terpolymer each contain, by weight, about 20–75 percent ethylene units, 15–80 percent C_3–C_{12} alpha-monoolefin units, 2–10 percent nonconjugated diene units, the balance being maleic anhydride units.

3,849,518

PROCESS FOR PREPARING IMPACT-RESISTANT POLYMERIC COMPOSITIONS CONTAINING GRAFT COPOLYMERS

Febo Severini, Alberto Valvassori, and Carlo Tavazzani, Milan, and Alberto Pagliari, Saronno, Italy, assignors to Montecatini Edison S.p.A., Foro Buonaparte, Milan, Italy

No Drawing. Filed Dec. 18, 1972, Ser. No. 315,879

Claims priority, application Italy, Dec. 24, 1971, 32,893/71

Int. Cl. C08f *15/00*

U.S. Cl. 260—878 R **3 Claims**

1. A process for preparing impact-resistant polymeric compositions comprising graft polymerizing at least one ethylenically unsaturated monomer selected from the

group consisting of styrenes, acrylonitrile, methacrylonitrile, styrene/acrylonitrile mixtures, alkyl acrylates, alkyl methacrylates, vinyl chloride and vinyl acetate onto an elastomer selected from the group consisting of saturated copolymers of ethylene and an α-olefin and low unsaturation copolymers of ethylene, an α-olefin and a diene or polyene hydrocarbon, wherein said elastomer is dissolved in a solvent selected from the group consisting of n-butane, propane and mixtures thereof.

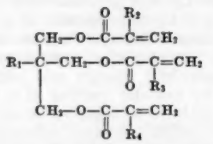
3,849,519

CHLOROPRENE ELASTOMER COMPOSITION

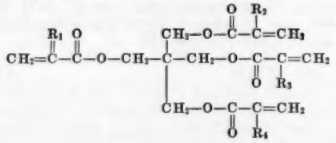
Takashi Kadowaki, Michio Dohi, and Katsuichi Yokobori, Omi-machi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Apr. 30, 1973, Ser. No. 355,344
Claims priority, application Japan, June 22, 1972, 47/62,663
Int. Cl. C08f *15/02, 15/06*
U.S. Cl. 260—890 **9 Claims**

1. A chloroprene elastomer composition which comprises a blend of (1) 20–80 parts by weight of a gel polymer prepared by polymerizing chloroprene monomer or a mixture of chloroprene monomer and no more than 20% of a comonomer in the presence of 1–10 wt. percent of a trifunctional cross-linking monomer based on the total monomer content of said gel polymer having the formula



wherein R_1 represents a hydrogen atom, or a methyl or ethyl group; R_2, R_3 and R_4 respectively represent hydrogen atoms or methyl groups, or in the presence of 1–10 wt. percent of a tetrafunctional cross-linking monomer based on the total monomer content of said gel polymer having the formula



wherein R_1, R_2, R_3 and R_4 represent hydrogen atoms or methyl groups; and (2) 80–20 parts by weight of a sol prepared by polymerizing chloroprene monomer or a mixture of chloroprene and no more than 20% of a comonomer.

3,849,520

RESINOUS BLEND AND ORIENTED SHRINK FILM COMPRISING POLYPROPYLENE, POLYBUTENE AND ETHYLENE/BUTENE COPOLYMER

Edward M. Bullard, South Orange, and Malcolm P. Schard, Washington Township, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Jan. 17, 1973, Ser. No. 324,265
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 A **7 Claims**

1. A resinous blend composition comprising:

(A) from about 50% up to about 95% by weight of a high isotactic content polypropylene resin; and

(B) from about 5% to about 50% by weight of a resinous mixture comprising:

(a) from about 10% up to about 75% by weight of a high isotactic content polybutene; and

(b) from about 25% up to about 90% by weight of a high isotactic content ethylene/butene-1 copolymer resin containing from about 0.1% to less than 10% by weight ethylene.

3,849,521

OIL- AND WATER-REPELLENT COMPOSITION COMPRISING A POLYMER CONTAINING FLUOROALKYL MONOMER UNITS AND AN ADDITIVE COPOLYMER

Kazusuke Kirimoto, Takao Hayashi, and Hiroaki Kojima, Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

No Drawing. Filed Sept. 19, 1972, Ser. No. 290,332
Int. Cl. C08f *29/22*
U.S. Cl. 260—900 **6 Claims**

1. In an oil- and water-repellent composition, which comprises:

an oil- and water-repellent polymer containing units of a fluoroalkyl monomer and an additive copolymer containing 90 to 99 weight percent monomer units having the formula:

$$CR_1R_2=CR_3COOR_4$$

wherein R_1, R_2 and R_3 represent hydrogen atoms or methyl groups, and R_4 represents C_{1-18} alkyl groups and 1–10 weight percent of monomer units of the formula:

$$CH_2=CR_5CONHCH_2OH$$

wherein R_5 represents hydrogen or methyl; the improvement which comprises:

an oil- and water-repellent polymer containing at least 25 weight percent fluoroalkyl monomer units having C_{3-15} per fluoroalkyl groups and containing 15 to 0.1 weight percent acrylamide derivative monomer units selected from the group consisting of diacetoneacrylamide, diacetonemethacrylamide, a lower alkylol diacetoneacrylamide and a lower alkylol diacetonemethacrylamide.

3,849,522

BIS((1-OXO-2,6,7-TRIOXA - 1 - PHOSPHA BICYCLO [2.2.2]OCT-4-YL)METHYL) 2,5 DIBROMOTEREPHTHALATE

William A. Hills, Trenton, N.J., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed June 11, 1973, Ser. No. 368,732
Int. Cl. C07d *105/04*; C08f *45/58*
U.S. Cl. 260—927 R **1 Claim**

1. Bis((1 - oxo - 2,6,7 - trioxa - 1 - phosphabicyclo [2.2.2]-oct-4-yl)methyl) 2,5-dibromoterephthalate.

3,849,523

PHOSPHORUS COMPOUNDS CONTAINING THE ATOM SKELETON P—(C—P)$_2$ OR P—(C—P)$_3$

Ludwig Maier, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 14, 1967, Ser. No. 690,418
Claims priority, application Switzerland, Dec. 16, 1966, 18,210/66; Dec. 21, 1966, 18,334/66; Dec. 23, 1966, 18,505/66
Int. Cl. C07f *9/38*
U.S. Cl. 260—932 **4 Claims**

1. A composition of matter having the formula:

$$[(RO)_2P(:O)CH_2]_xP(:O)(OR')_{3-x}$$

where x is 2 and the R and R′ are independently selected from the group consisting of H and alkyl of 1 to 12 carbons.

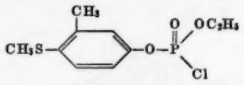
3,849,524

O-ETHYL-O-(3-METHYL - 4 - METHYLMERCAPTOPHENYL)PHOSPHORIC ACID DIESTER CHLORIDE

Reimer Collu, Wuppertal-Elberfeld, and Wolfgang Hofer, Fritz Maurer, and Lothar Rohe, Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 18, 1972, Ser. No. 298,728
Claims priority, application Germany, Oct. 28, 1971, P 21 53 793.9
Int. Cl. C07f 9/14
U.S. Cl. 260—949 1 Claim

1. O - ethyl - O -(3-methyl-4-methylmercaptophenyl)-phosphoric acid diester chloride of the formula



3,849,525

PROCESS OF MANUFACTURING POLYMER PARTICLES OF IRREGULAR SHAPE

Hendrik Adriaan Jacobus Battaerd, North Clayton, Victoria, Australia, assignor to ICI Australia Limited, and Commonwealth Scientific and Industrial Research Organization, Melbourne, Victoria, Australia

No Drawing. Filed May 22, 1972, Ser. No. 255,796
Claims priority, application Australia, May 31, 1971, PA 5,050/71
Int. Cl. B01j 2/08
U.S. Cl. 264—6 5 Claims

1. In a process of manufacturing agglomerates of polymer particles by suspension polymerisation of droplets of a monomer suspended in a liquid medium comprising:

(a) partially polymerising droplets of a monomer mixture suspended in a liquid medium mixed with a suspension stabilizer so that the droplets pass from an initial liquid state to a gel state;

(b) completing said polymerisation under agglomerating conditions, to produce agglomerates of polymer particles

the improvement comprising:

(c) subjecting the suspension of partially polymerised droplets mixed with a suspension stabilizer, to shear forces sufficiently high to overcome the forces of surface tension of the droplets and to cause the droplets to become elongated particles,

(d) continuing the polymerisation while concurrently subjecting the particles to said shear forces until the viscosity of the particles is sufficiently raised for the resulting configuration of elongated particles to be unaltered in the absence of shear forces, whereby polymer particles of elongated shape are formed,

(e) keeping the elongated particles in suspension by gentle agitation and allowing agglomeration of the particles to occur.

3,849,526

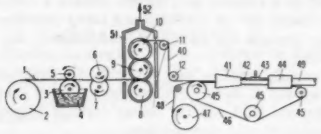
METHOD OF MAKING WEBS OF FILTER MATERIAL

Paul Adolf Muller, 9497 Triesenberg 405, Liechtenstein, and Hans Muster, 8340 Hadlikon-Hinwil, Switzerland

Filed July 8, 1971, Ser. No. 161,366
Claims priority, application Switzerland, May 13, 1971, 7,064/71
Int. Cl. A24c 5/50; B29c 24/00
U.S. Cl. 264—286 4 Claims

1. The method of treating an elongated web of fibrous material to render the same particularly adapted to be gathered transversely and enclosed in a wrapper to make a filter cord subdividable into filter rods and filter plugs for cigarettes, the steps comprising:

advancing an essentially in elastic web of the material through the bight between a pair of meshing rotating rolls provided with narrow longitudinal grooves parallel to the axes of the rolls alternating with



narrow longitudinal ribs parallel to the axes of the rolls which engage the web and prevent appreciable longitudinal contraction thereof so that the web is stretched longitudinally to loosen and expose fibers in a plurality of closely-spaced successive narrow areas disposed transversely of the web without substantial impairment of the longitudinal continuity of the web; and

advancing the longitudinally stretched web through the bight between a pair of non-contacting meshing rotating rolls provided with narrow circumferential grooves alternating with narrow circumferential ribs which engage the web and prevent appreciable lateral contraction thereof to groove the web in a direction parallel to its travel and stretched transversely of the grooves to loosen and expose fibers in a plurality of closely-spaced narrow longitudinal areas without substantial impairment of the transverse continuity of the web.

3,849,527

METHOD FOR MAKING REINFORCED OR FILLED RESIN PRODUCTS

Frede Hilmar Drostholm, 2950 Vedbaek, Denmark

No Drawing. Continuation of abandoned application Ser. No. 158,084, June 29, 1971. This application May 31, 1973, Ser. No. 365,698
Int. Cl. D04h 1/58
U.S. Cl. 264—35 16 Claims

1. A method for manufacturing products or articles or reinforced or filled polyesters, hardenable by means of a liquid ethylenically unsaturated monomeric crosslinking compound which is a solvent for said polyester, in the presence of a catalyst, which method comprises dry mixing the polyester with the reinforcing or filling material in the absence of the crosslinking compound and the catalyst, imparting the desired shape to the mixture of polyester and reinforcing or filling material, thereafter adding the liquid crosslinking compound and catalyst in the absence of the polyester to the shaped mixture of polyester and reinforcing or filling material, and thereafter curing the resin materials to form the product.

3,849,528

MICROPOROUS POLYMER SHEETS

Albert Ernest Smith, Ottawa, Ontario, Canada, assignor to Polysar Limited-Polysar Limited, Sarnia, Ontario, Canada

No Drawing. Filed Jan. 8, 1973, Ser. No. 321,931
Claims priority, application Canada, Feb. 16, 1972, 134,862
Int. Cl. B29h 7/20
U.S. Cl. 264—49 10 Claims

1. A process for producing a microporous sheet which comprises:

(1) depositing on a support a layer of thickness of about 0.6 cm. or less of solution of a composition which comprises a curable flowable polymer containing two or more reactive groups and having a

molecular weight of about 200 to about 10,000 and a curative which is a polyfunctional compound capable of reacting with the reactive groups of said polymer in a solvent, said solvent having a freezing point of about 50° to 150° C. and being capable of forming crystals on cooling to and below the freezing point;

(2) rapidly cooling said layer to a temperature of at least 40° C. below the freezing point of said solution whereby said solvent forms crystals dispersed in a matrix of said composition;

(3) reacting at a temperature below about 100° C. said curative with said curable polymer while maintaining said solvent as crystals until said matrix becomes non-flowable and substantially insoluble in said solvent at a temperature above the freezing point; and

(4) removing said solvent crystals by sublimation at about 20° to about 150° C. without substantially distorting said matrix,

thereby producing a microporous sheet having pore sizes of up to about 20 microns in diameter and a density of 0.1 to 0.8 gram per millilitre.

3,849,529

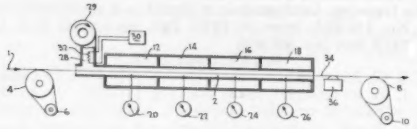
PROCESS FOR DRAWING POLYBENZIMIDAZOLE FIBROUS MATERIALS

George R. Ferment, Randolph, N.J., Arthur E. Prince, Jr., Charlotte, N.C., and Paul A. Sessa, Florham Park, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,511

Int. Cl. B29c *17/02;* **D02j** *1/22*

U.S. Cl. 264—85 **8 Claims**



1. An improved continuous process for the hot drawing of a continuous length of a polybenzimidazole fibrous material containing up to about 100 percent by weight of water, said drawing occurring without foaming and without employing multiple passes of the fibrous material through the drawing zone or drawing the fibrous material while in contact with a heated surface, which process comprises:

(a) continuously passing said continuous length of polybenzimidazole fibrous material in the direction of its length, for a single pass, through an elongated drawing zone containing a heated gaseous atmosphere maintained at a temperature of about 400 to 600° C.,

(b) continuously passing a preheated gas into said drawing zone at a rate which yields a Reynold's number within the drawing zone of about 50 to 50,000 so as to contact said fibrous material therein,

(c) drawing said fibrous material in said drawing zone while in contact with said preheated gas at a draw ratio of about 2:1 to 5:1 and at a drawing speed of at least 10 meters per minute, and

(d) thereafter continuously withdrawing from said drawing zone a stream of gas and drawn polybenzimidazole fibrous material.

3,849,530

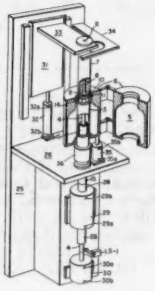
PROCESS FOR PRODUCING A BIAXIALLY ORIENTED THERMOPLASTIC ARTICLE

Nathaniel Convers Wyeth, Mendenhall, Pa., and Ronald Newman Roseveare, Lynchburg, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Application Nov. 30, 1970, Ser. No. 93,571, now Patent No. 3,733,309, dated May 15, 1973, which is a continuation-in-part of abandoned application Ser. No. 885,853, Dec. 17, 1969. Divided and this application June 14, 1972, Ser. No. 262,594

Int. Cl. B29c *17/07*

U.S. Cl. 264—89 **35 Claims**



1. A process for producing a molded, hollow, oriented, thermoplastic article from a thermoplastic slug having a hollow center and having at least one open end communicating with the hollow center comprising:

(a) placing the slug in an extrusion chamber;

(b) extruding that portion of the slug to be oriented by advancement in its axial direction into an annular extrusion die orifice, which die orifice is convergent in its cross-sectional area in the direction of extrusion and extrudes the slug walls outwardly, into a mold cavity, to a shape relatively larger than the original shape of the slug, the extruded slug walls being within the orientation temperature range; and, while the extrudate is within the mold cavity and within its orientation temperature range, and as extrusion of the slug continues, simultaneously

(1) drawing the extrudate by effecting relative sliding movement between the mold and the extrusion orifice; and

(2) expanding the extrudate toward the mold wall by forcing a fluid against the interior of the extrudate; and

(c) completing expansion of the extrudate against the mold wall.

3,849,531

METHOD OF MAKING A CORED LASER TUBE

Wayne S. Mefferd, Palo Alto, Calif., assignor to Coherent Radiation Laboratories, Inc., Palo Alto, Calif.

Original application Aug. 19, 1968, Ser. No. 753,684, now Patent No. 3,619,810. Divided and this application July 23, 1970, Ser. No. 63,994

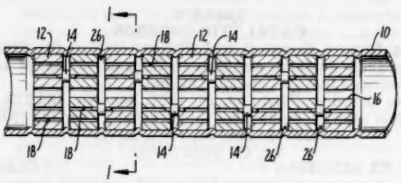
Int. Cl. B29c *17/07*

U.S. Cl. 264—92 **2 Claims**

1. The method of making a core structure surrounding the optical axis of an ion laser where said core structure is made of a plurality of graphite blocks having central bores extending along said axis which comprises:

A. Providing a key portion on the periphery of each of said blocks with said key portions extending less than 360° around the periphery of said block;

B. Supporting said blocks spaced apart from each other inside a tube of thermoplastic ceramic material having a lower coefficient of thermal expansion than said



blocks with the central bores in said blocks aligned with each other and with said blocks supported independently of said tube;

C. Heating said blocks and said tube in the area surrounding said blocks to a high temperature, which is above the normal operating temperature of the laser parts, at which the thermoplastic material of said tube will flow while applying a greater pressure to the exterior of said tube than to the interior of said tube until the material of said tube flows into engagement with the circumference of said blocks and said key portions of said blocks; and

D. Cooling said tube to a temperature below the temperature at which the material of said tube flows.

3,849,532

METHOD OF PREPARING A ZIRCONIUM OXIDE THAT IS CRYSTALLIZED MOSTLY OR COMPLETELY IN CUBIC FORM

Klaus Deneke, Troisdorf-Lulsdorf, and Wilhelm Falkenhain and Peter Hack, Troisdorf-Ranzel, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Continuation of abandoned application Ser. No. 16,968, Mar. 6, 1970. This application Jan. 31, 1972, Ser. No. 222,405

Int. Cl. C01g *25/02*

U.S. Cl. 423—82 **9 Claims**

1. A process for converting monoclinic zirconium oxide to cubic zirconium oxide, which monoclinic zirconium oxide has been obtained by the flotation separation of a zirconium oxide-silicon oxide mixture, including finely granulating the zirconium oxide recovered from said flotation separation; treating said granulate with dilute hydrofluoric acid solution having a concentration of between 5 and 10%; separating the so-treated granulate from said solution, mixing said granulate with at least one oxide of a metal selected from the group consisting of calcium, magnesium, yttrium, thorium and cerium; and heating such mixture to about 1,000 to 2,000° C., whereby converting said monoclinic crystal structure substantially to a cubic crystal structure in the solid state.

3,849,533

SORPTION AGENT FOR NONSOLID METALS

Wolfgang Hetz, Kehl, Germany, assignor to Roth Handels GmbH, Basel, Switzerland

No Drawing. Filed June 5, 1972, Ser. No. 259,480

Claims priority, application Switzerland, June 10, 1971, 8,588/71

Int. Cl. C01g *13/00*

U.S. Cl. 423—99 **10 Claims**

1. A method of collecting a liquid metal selected from the group consisting of mercury, gallium, Rose's metal, and Wood's metal which comprises contacting said liquid metal with a solid, absorbent carrier impregnated with a water-soluble salt of a metal more noble than said liquid metal until said liquid metal reacts with said salt of the more noble metal to form a salt of said liquid metal, and the formed salt is absorbed by said carrier.

3,849,534

COBALT STRIPPING

Roald R. Skarbo, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed July 19, 1973, Ser. No. 380,790

Int. Cl. B01d *15/06;* **B01j** *1/04;* **C22b** *23/04*

U.S. Cl. 423—139 **8 Claims**

1. Process for removing cobalt from an oxime solution by acid stripping which comprises

contacting the oxime solution with an aqueous solution of hydrochloric acid and sodium chloride,

allowing the phases to separate, and

recovering the oxime for reuse, and wherein the stripping solution comprises 2 Normal to 4 Normal HCl and 50 to 200 g./l. NaCl.

3,849,535

METHOD FOR RECOVERY OF ELEMENTS AND COMPOUNDS FROM AQUEOUS SOLUTIONS

Meherwan C. Irani, Pittsburgh, Pa., assignor of a fractional part interest to Eugene F. Buell

No Drawing. Filed Jan. 8, 1969, Ser. No. 789,952

Int. Cl. C01b *33/12;* **C01g** *49/02*

U.S. Cl. 423—140 **6 Claims**

1. A process for recovery from aqueous solutions dissolved iron and iron compounds which form gelatinous iron solids containing water when precipitated from such solutions, consisting of precipitating such iron and iron compounds by means of a chemical reaction to form said gelatinuous iron precipitate containing water in an aqueous solution, separating the gelatinuous iron precipitate from the solution, adding to the gelatinous iron precipitate enough of a material capable of absorbing water as one of the forms water of crystallization and hydroxide from said gelatinous iron precipitate and selected from the group consisting of alkali and alkaline earth oxides, hydroxides and carbonates, and anhydrous salts capable of absorbing water as water of crystallization, drying the resulting mixture to remove the uncombined water, stirring the product in sufficient water to dissolve water soluble constituents, allowing the insoluble constituents to settle and separating the settled residue from water.

3,849,536

WET COMBUSTION OF WASTE LIQUORS

John Edward Morgan, Burnie, Tasmania, Australia, assignor to Associated Pulp and Paper Mills Limited, Melbourne, Victoria, Australia

Filed Aug. 31, 1971, Ser. No. 176,651

Claims priority, application Australia, Aug. 31, 1970, 2,374/70

Int. Cl. C01d *1/04;* **C02b** *1/34;* **D21c** *11/14*

U.S. Cl. 423—206 **2 Claims**

1. A two-stage continuous method of wet combustion of a waste liquor obtained from the soda process for the pulping of wood and containing combustible components, which method comprises the serially succeeding steps of

mixing a stream of the waste liquor with heated oxygenating gas under pressure;

passing the mixture at a temperature between 450° and 705.4° F. and under a pressure between 70 and 225 atmospheres upwardly through a first reaction zone in the lower compartment of a generally vertical pressure vessel wherein to effect combustion of a major part of the combustibles content of the stream into an inert gaseous phase comprising carbon dioxide and steam, with generation of heat;

passing the resulting partially oxidized mixture composed of gaseous phase and liquid phase, at elevated temperature, under pressure upwardly into a second reaction zone in an upper compartment of said

pressure vessel, the said partially oxidized mixture being passed as a stream upwardly through but out of direct contact with liquid phase in the second reaction zone and being then distributed into said second reaction zone above such liquid phase;

separating the said inert gaseous phase from liquid phase of the partially oxidized mixture in the upper part of the second reaction zone, discharging the said inert gaseous phase from the upper part of the said second reaction zone, thereby reducing the partial pressure of the inert gaseous phase in equilibrium with the said liquid phase, causing the separated liquid phase to flow downwardly as a column of liquid in said second reaction zone, the temperature of the downwardly flowing column of liquid being at a temperature between 450° and 705.4° F. and under a pressure between 70 and 225 atmospheres;

subjecting the residual combustibles content to said downwardly flowing column of liquid, substantially free from the aforesaid gaseous phase, to further oxidation treatment by passing an oxygenating gas under pressure upwardly through said column of liquid, thereby forming a further gaseous phase and a substantially combustibles-free liquid phase, the partial pressure of oxygen in contact with the liquid phase in the second reaction zone being at least as great as the partial pressure of oxygen in contact with the liquid phase in the first reaction zone, and the temperatures in the first reaction zone and in the second reaction zone being substantially the same;

continuously discharging said further gaseous phase, in admixture with the first-mentioned gaseous phase, from above said column of liquid; and

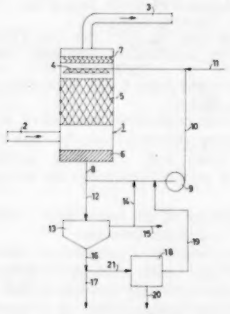
continuously withdrawing liquid phase, substantially free from combustibles, from the lower part of the second reaction zone.

3,849,537

METHOD OF PURIFYING GASES CONTAINING MERCURY VAPOUR

Torkel Allgulin, Skelleftehamn, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Feb. 23, 1972, Ser. No. 228,610
Claims priority, application Sweden, Feb. 23, 1971, 2,300/71
Int. Cl. B01d *53/34*
U.S. Cl. 423—210 **16 Claims**



1. A method for purifying gases containing gaseous elementary mercury, comprising: preparing a washing solution containing mercury (II)ions in a quantity from 0.02 g./l. to saturation level and a quantity of at least one of the ions selected from the group Cl^-, Br^-, I^- and SO_4^{2-} which form sparingly soluble Hg(I) salts, the quantity of Cl^-, Br^-, I^- and SO_4^{2-} being sufficient to enable formed Hg(I) to precipitate out from the solution but insufficient to cause corresponding Hg(I) salts to be disproportioned to Hg(II) and Hg°, washing the contaminated gas with said solution.

3,849,538

CATALYTIC PROCESS

John Stewart Campbell and Phineas Davies, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Oct. 13, 1971, Ser. No. 188,772
Claims priority, application Great Britain, Oct. 14, 1970, 48,825/70; Feb. 26, 1971, 5,546/71
Int. Cl. B01d *53/00*
U.S. Cl. 423—213.5 **4 Claims**

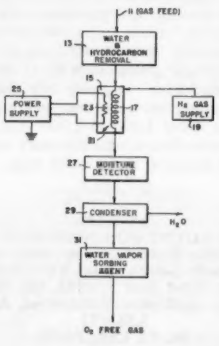
1. A process of treating an internal combustion engine exhaust gas containing nitrogen oxides and carbon monoxide to decrease the content thereof before discharge into the atmosphere, said process comprising a start-up phase wherein the exhaust gas and added air are passed over a refractory catalyst under oxidizing conditions to heat said catalyst to its operating temperature in the range of 750–900° C., a subsequent running stage wherein the exhaust gas is passed over the refractory catalyst under net reducing conditions at said operating temperature and at a space velocity of 6000 to 60,000 $hour^{-1}$ whereby at least 70% of the nitrogen oxides in said exhaust gas is destroyed with not more than 20% thereof being converted to ammonia, and a further stage wherein the thus treated exhaust gas is passed over an oxidation catalyst to convert the carbon monoxide in said gas to a nontoxic or innocuous gas, said refractory catalyst consisting essentially of a high temperature steam reforming base metal or precious metal catalyst having an active metal crystallite size of at least 1000 A., an active metal specific surface of less than about 10 $m.^2/g.$ of the active metal, a total specific surface of less than 150 $m.^2/g.$ and hydrothermal stability, the catalyst being supported on a steam-stable refractory oxide.

3,849,539

METHOD OF OXYGEN DETECTION AND REMOVAL

John H. Coleman, Roseville, Mich., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 17, 1972, Ser. No. 298,201
Int. Cl. C01b *13/00*
U.S. Cl. 423—219 **1 Claim**



1. A method of determining and removing oxygen from a gas stream inert to hydrogen, wherein said oxygen concentration is less than 1% by weight, comprising:

passing said gas through a sorbent material selected from the group consisting of magnesium perchlorate and the metal aluminosilicates for drying said gas to

a partial pressure of water vapor no more than a few hundredths of a millimeter of mercury;

passing said gas at about 3 atmospheres absolute pressure through a coil of tubing composed of a material comprising palladium;

contacting the outside surface of said coil of tubing with essentially pure hydrogen gas at about 6 atmospheres pressure and about 200° C. to diffuse a sufficient amount of hydrogen through the wall of said tubing to chemically combine with substantially all of said oxygen and form water vapor;

cooling said gas to and continuously monitoring the condensation-point temperature of water vapor in said gas in order to detect the moisture concentration resulting from said chemical combination of oxygen with hydrogen within said gas; and

further cooling said gas to about 1° C. above the freezing point of water at about 3 atmospheres absolute pressure to condense a major portion of said water vapor therefrom and subsequently passing said gas into contact with a sorbent material selected from the group consisting of the metal aluminosilicates and magnesium perchlorate to remove substantially all of said water vapor and thereby produce a substantially oxygen free gas.

3,849,540

METHOD OF SWEETENING NATURAL GAS

Jim Maddox, Jr., and Fan-Sheng Tao, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed June 19, 1972, Ser. No. 263,912
Int. Cl. B01d *53/34*
U.S. Cl. 423—224 **15 Claims**

1. A process for removing hydrogen sulfide from natural gas comprising:

(a) oxygenating an aqueous solution consisting of a soluble catalyst, said catalyst consisting of transition metal compounds selected from the group consisting of salts of nickel, cobalt, manganese, copper, and iron,

(b) removing entrained but undissolved oxygen from the aqueous solution and

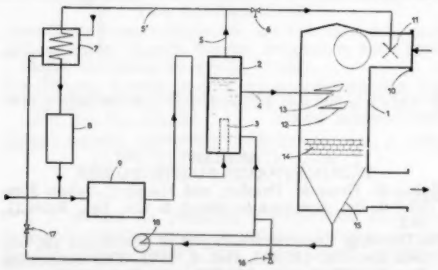
(c) treating hydrogen sulfide containing natural gas with the oxygen rich aqueous solution of step (b) at atmospheric pressure.

3,849,541

PROCESS FOR PURIFYING FUMES

Charles Bertrand, 49 Rue Gadeau de Kerville, Satteville-les-Rouen, France

Continuation-in-part of abandoned application Ser. No. 871,822, Oct. 28, 1969. This application May 24, 1972, Ser. No. 256,454
Claims priority, application France, Nov. 4, 1968, 7,241; Dec. 30, 1968, 7,247; Aug. 1, 1969, 6926450
Int. Cl. C01b *13/00*
U.S. Cl. 423—242 **13 Claims**



1. A process for substantially desulfurizing industrial effluent fumes which contain sulphur dioxide, comprising:

mixing the fumes with oxygen;

absorbing ozone in a solution of sulphuric acid;

reacting the fumes and oxygen with a stream of said ozone-carrying sulfuric acid solution for a total contact time of 4–6 seconds, wherein the ozone serves substantially only as a catalyst.

3,849,542

LITHIUM MAGNESIUM ALUMINUM HYDRIDE

John A. Snover, Midland, Mich., Joseph H. Waibel, Lake Jackson, Tex., and Arthur L. Daniels, Coleman, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 9, 1966, Ser. No. 549,430
Int. Cl. C01b *6/24*
U.S. Cl. 423—644 **8 Claims**

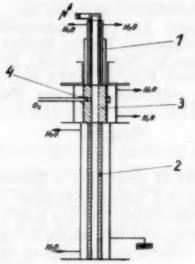
1. The compound lithium magnesium aluminum hydride corresponding to the empirical formula $LiMg(AlH_4)_3$.

3,849,543

MAKING METAL OXIDES WITH OXYGEN-CONTAINING GAS PRE-HEATED OVER Pd-Au-Ag-ALLOY ELECTRODE

Hans Zirngibl, Duisburg, Werner Fuhr and Klemens Jaschinski, Krefeld-Uerdingen, Peter Beumer, Krefeld, and Walter Weidmann, Duisburg-Mundelheim, Germany, assignors to Bayer Aktiengesellschaft

Filed May 11, 1971, Ser. No. 142,125
Claims priority, application Germany, May 27, 1970, P 20 25 897.3
Int. Cl. C01g *1/02, 23/04*
U.S. Cl. 423—592 **7 Claims**



1. In the production of a metal oxide including the steps of pre-heating an oxygen-containing gas, and then mixing said gas with the vapor of a metal halide to produce said metal oxide, the improvement which comprises pre-heating said oxygen-containing gas by passage through an electric arc established across two electrodes at least the anode of which is an electrode material comprising a Pd-Au-Ag-alloy containing from about 10 to 65% by weight of palladium, about 20 to 65% by weight of gold and about 15 to 50% by weight of silver, whereby there is essentially no weight loss of the electrode and no contamination of the metal oxide by the electrode.

3,849,544

COMPOUND $Cd_2Os_2O_7$ HAVING PYROCHLORE CRYSTAL STRUCTURE

Arthur W. Sleight, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 15, 1973, Ser. No. 332,579
Int. Cl. C01g *55/00*
U.S. Cl. 423—593 **2 Claims**

1. A composition having pyrochlore crystal structure of the formula

$$Cd_{2-x}Os_2O_{7-y}$$

wherein x and y independently are in the range 0 to about 0.5.

3,849,545
ZINC FERRITE OXIDATIVE DEHYDROGENATION CATALYST AND METHOD OF PREPARATION

Edward J. Miklas, Houston, Tex., assignor to Petro-Tex Chemicals Corporation, Houston, Tex.

No Drawing. Continuation-in-part of abandoned application Ser. No. 122,162, Mar. 8, 1971. This application June 1, 1973, Ser. No. 365,916
Int. Cl. C01g 9/00, 49/00
U.S. Cl. 423—594 13 Claims

1. A method of preparing a zinc ferrite oxidative dehydrogenation catalyst comprising the steps of (a) contacting a solution of a soluble metal component comprising zinc and iron with a precipitating agent to precipitate an insoluble metal component comprising zinc and iron, said solution containing in addition to the soluble metal component from 0.1 to 11 weight percent of a soluble polyhydric organic compound based on the weight of metal and (b) calcining the precipitate to form said zinc ferrite oxidative dehydrogenation catalyst, wherein the precipitating agent is a solution of a hydroxide of a metal selected from the group consisting of Li, Na, K, Rb, and Cs, said precipitating solution having a normality of between 2 and 4 and said polyhydric compound contains at least 2 hydroxyl groups and is selected from the group consisting of organic alcohols, polyesters, polyethers, polysaccharides and mixtures thereof having a molecular weight of at least about 3,000.

3,849,546
PROCESS FOR OBTAINING ANTIGEN-LIPOID EMULSIONS

Jean-Louis Beaumont, La Varenne-Saint-Hilaire, France, assignor to Etablissement Public: Institut National de la Sante et la Recherche Medicale, Paris, France

No Drawing. Filed Feb. 23, 1972, Ser. No. 228,741
Claims priority, application France, Feb. 26, 1971, 7106658
Int. Cl. C12k 1/00; G01n 31/02, 33/00
U.S. Cl. 424—12 8 Claims

1. In the process of preparing a lipoid emulsion containing an antigen for immunochemical determinations, the said process comprising forming said antigen-containing emulsion in a neutral oil, which is liquid at ambient temperature, and subjecting the same to ultrasounds, the improvement comprising washing said emulsion with physiological saline solution or phosphate buffer solution having a pH of 7.3 with successive washing centrifugations and separations whereby a stable antigen-emulsion is recovered free of separate particles of said antigen.

3,849,547
COLORED NAIL POLISHES

Gregoire Kalopissis, Paris, France, assignor to Societe Anonyme dite: L'Oreal, Paris, France

No Drawing. Continuation-in-part of abandoned applications Ser. No. 655,741, July 25, 1967, and Ser. No. 749,315, Aug. 1, 1968. This application Feb. 2, 1971, Ser. No. 112,037
Int. Cl. A61k 7/04
U.S. Cl. 424—61 12 Claims

1. A transparent nail polish composition consisting essentially of a solution of 12–15% by weight of a nitrocellulose film former,

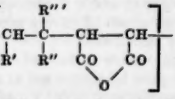
6–13% by weight of an aryl sulfonamide formaldehyde resin,

5–8% by weight of a plasticizer selected from the group consisting of dibutyl phthalate, camphor and their mixtures,

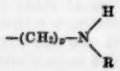
1–15% by weight of a coupler selected from the group consisting of ethanol, butanol, n-propanol, isopropanol and their mixtures,

12–32% by weight of a diluent selected from the group consisting of xylene, toluene and their mixtures, and

0.5–6% by weight of a soluble colored polymer consisting essentially of recurring units of the formula



wherein R′ and R″ each independently are selected from the group consisting of hydrogen, lower alkyl having 1–4 carbon atoms, phenyl and lower alkoxy having 1–4 carbon atoms, R‴ is selected from the group consisting of hydrogen, —OCOCH$_3$, —C≡N and —COOCH$_3$, having condensed on the anhydride function thereof (1) a dye selected from the group consisting of azo, anthraquinone and benzene dyes containing an extra nuclear radical having the formula



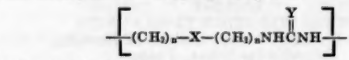
wherein p is 2–6, and R is selected from the group consisting of hydrogen, —CH$_3$ and —C$_2$H$_5$, said extra nuclear radical being bonded to the aromatic nucleus of said dye through a nitrogen atom directly attached to said aromatic nucleus and said dye being bonded to said recurring units by an amide bond through the terminal nitrogen atom of said extra nuclear radical and (2) n-butyl alcohol, the remainder of said composition being essentially a solvent selected from the group consisting of acetone, ethyl acetate, butyl acetate, methyl acetate and mixtures thereof.

3,849,548
COSMETIC COMPOSITIONS

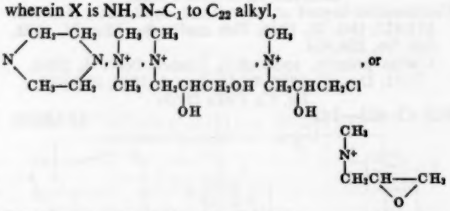
Paul Sheldon Grand, South Bound Brook, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,153
Int. Cl. A61k 7/06
U.S. Cl. 424—70 17 Claims

1. A method of improving the condition of the hair and skin which comprises the step of applying thereto a conditioning amount of a composition comprising (I) a water-soluble aminopolyurea resin conditioning agent having a molecular weight in the range of 300 to 100,000 and having the following repeating unit:



wherein X is NH, N–C$_1$ to C$_{22}$ alkyl,



Y is O or S, and n is 2 or 3; and (II) a compatible, nontoxic cosmetic vehicle.

3,849,549
INDOMETHACIN SUPPOSITORIES

Robert E. Dempski, Dresher, and Joseph C. Saboe, Norristown, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 187,113, Oct. 6, 1971. This application June 9, 1972, Ser. No. 261,178
Int. Cl. A61j 3/08; A61k 27/00
U.S. Cl. 424—78 5 Claims

1. A suppository preparation consisting essentially of a dosage unit amount of indomethacin in a polyethylene

glycol or a mixture of polyethylene glycols base containing from about 1.0 to not more than about 4.5% by weight of a nucleating agent selected from the group consisting of alkali halide, lactose, calcium chloride and sucrose, and from about 4 to not more than about 12% by weight of glycerol.

3,849,550

THERAPEUTIC COPOLYMER

Dvora Teitelbaum, Ramat Gan, and Asher Meshorer, Tsvi Hirshfeld, Ruth Arnon, and Michael Sela, Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

No Drawing. Filed Mar. 31, 1972, Ser. No. 240,244

Claims priority, application Israel, Apr. 21, 1971, 36,670

Int. Cl. A61k *27/00*

U.S. Cl. 424—78 **5 Claims**

1. A therapeutic preparation for use in the treatment or prevention of experimental allergic encephalomyelitis, comprising a water-soluble copolymer having a molecular weight in excess of 15,000 and up to 25,000, a net positive electrical charge, and being selected from the group consisting of a copolymer of a mixture consisting essentially of (1) alanine, glutamic acid, lysine and tyrosine in the molar ratio of about 6 parts alanine to 2 parts glutamic acid to 4.5 parts lysine to 1 part tyrosine; (2) alanine, aspartic acid, lysine and tyrosine in the molar ratio of about 5 parts alanine to 1.5 parts aspartic acid to 3.5 parts lysine to 1 part tyrosine; and (3) alanine, glutamic acid and lysine in the molar ratio of about 5 parts alanine to 1.5 parts glutamic acid to 3.5 parts lysine; in an amount effective for treatment or prevention of the said disease, dispersed in a pharmaceutically acceptable carrier for injectable administration.

3,849,551

BCG AS ADJUVANT IN MALARIA VACCINATION

Lawrence E. D'Antonio, 1000 Clifton Ave., Collingdale, Pa. 19023

No Drawing. Filed Sept. 28, 1972, Ser. No. 292,945

Int. Cl. C12k *5/00*

U.S. Cl. 424—88 **15 Claims**

1. A process for the vaccination of an animal against malaria which comprises administering to an animal materials consisting essentially of a non-living malaria vaccine and an amount of living BCG effective to function as an adjuvant for said vaccine, the combination of malaria vaccine and BCG being sufficient to provide an immune protection of the animal against malaria.

3,849,552

PROTEASE INHIBITORS AND METHOD FOR PREPARATION

Arne Gosta Jonsson, Sodertalje, and Nils Torsten Lennart Torstensson, Uppsala, Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

No Drawing. Continuation of abandoned application Ser. No. 128,493, Mar. 26, 1971. This application June 21, 1973, Ser. No. 372,208

Claims priority, application Great Britain, Apr. 1, 1970, 15,530/70; Jan. 28, 1971, 3,426/71

Int. Cl. A61k *21/00*

U.S. Cl. 424—115 **2 Claims**

1. A process for preparing a preparation containing protease inhibitors which comprises cultivating *Streptomyces violascens*, NRRL 3859, under aerobic conditions in a nutrient medium containing sources of carbon, nitrogen, and nutrient inorganic salts in assimilable form, for a period of about 10 to 100 hours until a sufficient amount of protease inhibitors is produced, said medium having a pH, prior to inoculation, ranging between about 5 and 8, and a temperature during fermentation ranging from about 10° to about 40° C.

3,849,553

CYCLIC NUCLEOTIDE THERAPEUTIC PREPARATION

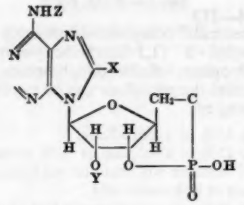
Frank J. Dea, Fullerton, and Eric L. Nelson, Santa Ana, Calif., assignors to Nelson Research & Development Company, Irvine, Calif.

No Drawing. Filed Sept. 4, 1973, Ser. No. 393,715

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **9 Claims**

1. A method for treating psoriasis in humans comprising the administration to a human suffering from psoriasis of an effective dose for treating psoriasis of a compound of the formula



where Y and Z are each selected from the group consisting of H or butyryl and X is selected from the group consisting of H, —Br, —SCH_3, —SH, —OH and —NH_2, or a pharmaceutically acceptable addition salt thereof, provided that X, Y and Z are not all H, in a suitable pharmaceutical carrier.

3,849,554

REDUCTION OF BLOOD SERUM CHOLESTEROL

Milton Winitz, Palo Alto, Calif., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Continuation-in-part of abandoned application Ser. No. 510,778, Dec. 1, 1965. This application July 28, 1969, Ser. No. 847,815

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **8 Claims**

1. A method for lowering the blood serum cholesterol level of a human in need of such therapy, which method consists essentially of administering to the human as the sole source of sustenance a defined diet composition consisting essentially of vitamins, minerals, a source of amino acids, a source of essential fatty acid and a carbohydrate component selected from the group consisting of glucose, maltose, polysaccharides of glucose, and mixtures thereof.

3,849,555

METHOD FOR MODIFYING SOUR AND BITTER TASTE

Robert J. Harvey, Sudbury, Mass., assignor to Mirlin Corporation, Wayland, Mass.

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,962

Int. Cl. A61k *27/14*

U.S. Cl. 424—195 **9 Claims**

1. A method for rendering food sweet tasting which comprises:

contacting the tongue with material rich in the taste-modifying principle of *Synsepalum dulcificum* Daniell in an amount effective to modify the taste receptors of the tongue, said material being substantially free from the components of the ripe fruit of *Synsepalum dulcificum* Daniell which degrade the taste-modifying principle; and,

thereafter and while said taste receptors are modified ingesting a mixture of food and non-toxic normally sour-tasting acid, the effective acid molarity of said mixture being in the range of 0.005M to 0.03M.

3,849,556

INSECTICIDAL COMPOSITION CONTAINING SURFACE ACTIVE DIURETHANES AND THIOPHOSPHORIC ACID ESTERS

Werner Wolff, Neubotting an der Inn, and Ruth Faber and Kasimir Ruchlack, Burgkirchen an der Alz, Germany (all % Farbwerke Hoechst AG, Frankfurt am Main, Germany)

No Drawing. Original application Aug. 15, 1968, Ser. No. 752,755. Divided and this application Aug. 11, 1972, Ser. No. 226,239

Claims priority, application Germany, Aug. 26, 1967, F 53,335

Int. Cl. A01n 9/36

U.S. Cl. 424—213 **1 Claim**

1. An insecticidal composition consisting of 70 to 90% of O,O-dimethyl - S - (1,2-dicarbethoxy-ethyl)-dithiophosphate, 4-nitrophenyl-diethyl-thiophosphate, or 4-nitrophenyl-dimethyl-thiophosphate and 30 to 10% of an emulsifier consisting of

(a) 65 to 75% of a diurethane,

(b) 20 to 15% of a solution of 70% strength of calcium dodecyl benzene sulfonate or tetrapropylene benzene sulfonate in isobutanol and

(c) 15 to 10% of a reaction product of tributyl phenol with 20 mols of ethylene oxide or a reaction product of nonylphenol with 17 or 18 mols of ethylene oxide

said diurethane being obtained by reacting 1 mol of a bulk polymer of a molecular weight of 1,000 to 6,000 consisting of a water-insoluble polyether of a molecular weight of 500 to 3,000 on the basis of propylene oxide, butylene oxide or epichlorohydrine, to which 35 to 100%, referred to the weight of the polyether, of ethylene oxide was added, and 1 mol of a polyether alcohol of the formula

$$R—(C_2H_4O)_nH$$

in which R is alkyl of 8 to 18 carbon atoms, mono-, bis- or tris-alkyl benzene or mono-, bis- or tris-alkyl naphthalene, each alkyl containing 4 to 22 carbon atoms, and *n* is an integer of 2 to 10, with 1 mol of a diisocyanate at a temperature of 100 to 200° C. in the melt or in the presence of an inert organic solvent, said diisocyanate being selected from the group consisting of:

(a) hexamethylenediisocyanate

(b) mixtures of 2,4- and 2,6-toluylene-diisocyanate, and

(c) naphthylene-1,5-diisocyanate.

3,849,557

PHARMACEUTICAL COMPOSITIONS CONTAINING 1,1 - AZO BIS - (1H - IMIDAZO[1,2-a]PYRIDINIUM) DIBROMIDE COMPOUNDS AND THE USE THEREOF

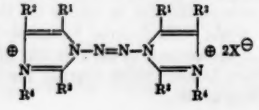
David Jack, London, and Ernest Edward Glover, Nunthorpe, England, assignors to Allen & Hansburys Limited, London, England

No Drawing. Original application May 13, 1971, Ser. No. 143,210, now Patent No. 3,773,746, dated Nov. 20, 1973. Divided and this application Dec. 5, 1972, Ser. No. 312,261

Int. Cl. A61k 27/00

U.S. Cl. 424—226 **2 Claims**

1. An injectable composition in dosage unit form comprising as active ingredient a compound of the formula:



wherein:

R^1 and R^2, which are the same or different, are each hydrogen, lower alkyl, halogen, phenyl, phenyl substituted by halogen, phenyl substituted by hydroxy, phenyl substituted by lower alkoxy, phenyl substituted by trifluoromethyl, phenyl substituted by nitro; or together with the adjacent carbon atoms to which they are attached form phenyl;

R^3 and R^4, which are the same or different, are each lower alkyl or phenyl, or together with the adjacent nitrogen atom form pyridinium or tetrahydropyridinium; and

X is a physiologically acceptable anion, in association with a pharmaceutically acceptable carrier, wherein each dosage unit contains from 2 to 100 mgs. of active ingredient.

3,849,558

PHARMACEUTICAL COMPOSITIONS HAVING CONTROLLED GASTRO-INTESTINAL ABSORPTION

Toshio Nakamura, Tadao Maeda, and Hiroshi Takenaka, Ibaraki, and Yoshiya Yamahira, Takatsuki, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

No Drawing. Filed May 25, 1970, Ser. No. 40,358

Claims priority, application Japan, June 3, 1969, 44/43,895; Jan. 30, 1970, 45/8,619

Int. Cl. A61k 15/12, 21/00, 27/00

U.S. Cl. 424—234 **5 Claims**

1. A pharmaceutical composition having controlled gastro-intestinal absorption rate of a therapeutcially active agent, said composition comprising a therapeutically effective amount of the therapeutically active agent and an equivalent or more amount by weight to the therapeutically active agent of castor oil, said therapeutically active agent being selected from the group consisting of chloramphenicol, chloramphenicol palmitate, riboflavin, riboflavin butyrate, salicylic acid, 1-p-chlorobenzoyl-2-methyl-5-methoxy-3-indolylacetic acid and pharmaceutically acceptable water soluble salts thereof.

3,849,559

TRANQUILIZER COMPOSITION AND METHOD OF TREATMENT

Erhard Wolf, Hofheim, Taunus, Hans Kohl, Schwalbach, Taunus, and Günter Härtfelder, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

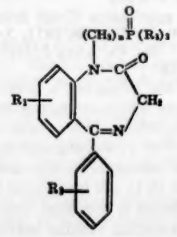
No Drawing. Continuation of application Ser. No. 140,977, May 6, 1971, now Patent No. 3,738,982. This application Mar. 12, 1973, Ser. No. 340,209

Claims priority, application Germany, May 8, 1970, P 20 22 503.0; Sept. 23, 1970, P 20 46 848.8

Int. Cl. A61k 27/00

U.S. Cl. 424—244 **18 Claims**

1. Pharmaceutical preparation having tranquilizing properties containing an effective amount of an active compound of the formula



in which R_1 and R_2, which may be identical or different, each represent a hydrogen atom, a nitro group, a halogen atom or the trifluoromethyl group and R_2 in addition may represent a straight chain or branched alkyl group having 1 to 6 carbon atoms, R_3 represents a straight chain or branched alkyl group having 1 to 3 carbon atoms, and *n* is a number from 1 to 6, and a pharmaceutically tolerable adjuvant or excipient.

3,849,560

5-(5'-BARBITURILIDENE) - 4 - OXOTHIAZOLIDINE-2-IMINO HCl SALT USED AS AN ANTIMICROBIAL AGENT

Al F. Kerst, 5470 W. Geddes and John D. Douros, Jr., 6855 S. Depew, both of Littleton, Colo. 80123, and Milan Brokl, 1633 Cherry St., Denver, Colo. 80122

No Drawing. Continuation-in-part of abandoned application Ser. No. 180,923, Sept. 15, 1971. This application Dec. 1, 1972, Ser. No. 311,075

Int. Cl. A01n *9/12*

U.S. Cl. 424—254 **50 Claims**

1. A method of killing or inhibiting the growth of microorganisms selected from the group consisting of fungi, Gram positive bacteria and Gram negative bacteria which comprises contacting said microorganisms with 5-(5'-barbiturilidene)-4-oxothiazolidine-2-imino HCl salt in an amount effective to kill or inhibit the growth of said microorganisms.

3,849,561

ANTI-PEPTIC ULCER SUBSTANCE FROM CORYDALIS TUBERS

Junzo Iwasa, 24, Kouriumatsuka-cho, Nishikyogoku, Ukyo-ku, Kyoto-shi, Japan; Shunsuke Naruto, 843, Higashino-cho, Uriwari, Higashisumiyoshi-ku, Osaka-shi, Japan; Noboru Ikeda, 326–2, Nagayoshinagaharacho, Higashisumiyoshi-ku, Osaka-shi, Japan; Keiji Nakamura, 5–4, Aza, Akinaga, Nishimuko, Amagasaki-shi, Hyogo-ken, Japan; and Yukinobu Sohji, 851, Oaza, Takayanagi, Neyagawa-shi, Osaka-fu, Japan

No Drawing. Continuation-in-part of application Ser. No. 735,162, June 7, 1968, which is a continuation-in-part of application Ser. No. 649,103, June 27, 1967, which in turn is a continuation-in-part of application Ser. No. 493,267, Oct. 5, 1965, all now abandoned. This application Apr. 20, 1971, Ser. No. 135,594

Claims priority, application Japan, Oct. 20, 1964, 39/59,633; July 28, 1965, 40/45,681

Int. Cl. A61k *27/00*

U.S. Cl. 424—258 **3 Claims**

1. A pharmaceutical composition for treating peptic ulcers comprising as the essential active ingredient dehydrocorydaline chloride in admixture with a pharmaceutically acceptable carrier, said composition being in the form of a tablet containing 15.0 mg. of dehydrocorydaline chloride.

3,849,562

METHOD OF TREATING NEPHROSIS

Brian Peter Richardson, Basel, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Filed Mar. 15, 1973, Ser. No. 341,509

Int. Cl. A61k *27/00*

U.S. Cl. 424—261 **3 Claims**

1. A method of treating nephrosis which comprises administering to a mammal in need of said treatment an amount effective for the treatment of nephrosis of 2-bromo-α-ergocryptine.

3,849,563

N-ALKANOYL-N-[1 - (HETEROCYCLIC AMINO) ISOPROPYL] - 2 - AMINOPYRIDINES IN THE TREATMENT OF PAIN

Rudolf Hiltmann, Hartmund Wollweber, and Friedrich Hoffmeister, Wuppertal-Elberfeld, and Hans-Gunther Kroneberg, Wuppertal-Vohwinkel, Germany, assignors to Bayer Aktiengesellschaft

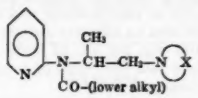
No Drawing. Application Dec. 27, 1971, Ser. No. 212,749, now Patent No. 3,773,771, which is a continuation-in-part of applications Ser. No. 82,838, Oct. 21, 1970, and Ser. No. 113,053, Feb. 5, 1971, Ser. No. 82,838 being a continuation-in-part of application Ser. No. 761,795, Sept. 23, 1968, and Ser. No. 113,053 being a continuation of application Ser. No. 761,323, Sept. 20, 1968, all now abandoned. Divided and this application May 7, 1973, Ser. No. 357,728

Claims priority, application Germany, Sept. 25, 1967, F 53,580, F 53,582

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **16 Claims**

1. A pharmaceutical composition useful for its analgesic effect comprising an analgesically effective amount of a compound selected from the group consisting of a 2-aminopyridine of the formula:



wherein X is a pentamethylene chain substituted by two methyl groups or a hexamethylene chain substituted by one or more or two methyl groups, and a pharmaceutically acceptable acid addition salt thereof, in combination with a pharmaceutically acceptable carrier.

3,849,564

INDOLE DERIVATIVES IN REDUCING INFLAMMATION

Marcel Descamps, Crainhem, and Henri Inion, Wemmel, Belgium, assignors to Labaz, Paris, France

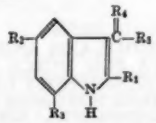
No Drawing. Continuation of abandoned application Ser. No. 203,915, Dec. 1, 1971. This application Oct. 9, 1973, Ser. No. 404,251

Claims priority, application Great Britain, Dec. 9, 1970, 58,543/70

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **21 Claims**

1. Method of treating a mammal to reduce inflammation which comprises administering thereto 100 mg. to 1000 mg. per 60 kg. of body-weight per day of a compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein R_5 represents 2-pyridyl, 3-pyridyl or 4-pyridyl and wherein R_2, R_3, R_4 and R_5 are such that:

(a) in the compounds wherein R_5 represents 2-pyridyl, when R_4 represents oxygen, R_1 represents ethyl and R_2 and R_3 represent hydrogen, and when R_4 represents NH, R_1 represents methyl and R_2 and R_3 represent hydrogen;

(b) in the compounds wherein R_5 represents 3-pyridyl, when R_1 represents methyl, ethyl, n-propyl or iso-

propyl, R_2 and R_3 represent hydrogen and R_4 represents oxygen, when R_2 represents methoxyl, R_1 represents methyl or isopropyl, R_3 represents hydrogen and R_4 represents oxygen, when R_3 represents methyl, R_1 represents isopropyl, R_2 represents hydrogen and R_4 represents oxygen or NH, and when R_1 represents methyl, n-propyl, isopropyl or isobutyl, R_2 and R_3 represent hydrogen and R_4 represents NH;

(c) in the compounds wherein R_5 represents 4-pyridyl, when R_1 represents isopropyl, R_2 and R_3 represent hydrogen and R_4 represents oxygen or NH, and when R_1 represents methyl, ethyl or n-propyl, R_2 and R_3 represent hydrogen and R_4 represents NH.

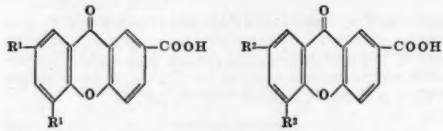
3,849,565

DISUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS FOR INHIBITING ASTHMA

Jurg R. Pfister, Los Altos, and Ian T. Harrison and John H. Fried, Palo Alto, Calif., assignors to Syntex (U.S.A.) Inc.

No Drawing. Filed Jan. 12, 1972, Ser. No. 217,287
Int. Cl. A61k *27/00*
U.S. Cl. 424—283 **13 Claims**

1. A method for inhibiting the symptoms of the asthmatic condition resulting from an antigen-antibody reaction in a host susceptible to said reaction which comprises administering to said host an effective amount of from about 0.005 to about 100 mg. per kg. of body weight per day sufficient to produce said inhibition of a compound represented by the formulas:



wherein the R^1 groups are identically the group

in which *n* is the integer 1 or 2, and R is lower alkyl; and one R^2 group is selected from the group consisting of lower alkyl and lower alkoxy and the other R^2 group is the group

in which each of *n* and R is as defined above or pharmaceutically acceptable non-toxic alkyl or glycerol ester, unsubstituted, monoalkyl, dialkyl, dialkylaminoalkyl, alkoxyalkyl or phenethyl substituted amide, or salt thereof, wherein said alkyl and alkoxy groups each contain 1 to 8 carbon atoms.

3,849,566

METHOD OF PROPHYLAXIS AND THERAPY OF SPECIES *ULMUS* FOR DUTCH ELM DISEASE CAUSED BY *CERATOCYSTIS ULMI*

Bela J. Szappanyos, 3325 Burning Bush Road, Birmingham, Mich. 48010

Filed Dec. 26, 1968, Ser. No. 786,972
Int. Cl. A01n *9/26*
U.S. Cl. 424—343 **10 Claims**

1. A method of treating Dutch Elm disease in species *ulmus* comprising introducing into the vascular system of the species *ulmus*

an aqueous solution of

a water soluble penetrant of dimethyl sulfoxide and,

a water soluble fungicide of a salt solution of dichlorophene.

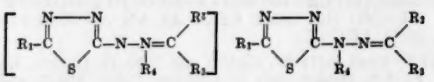
3,849,567

USE OF THIADIAZOLE HYDRAZONES AS BACTERICIDES

Chester G. Lemanski, East Brunswick, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,429
Int. Cl. A01n *9/12*
U.S. Cl. 424—270 **4 Claims**

1. A method for combatting bacteria which comprises applying to said bacteria a bactericidally effective amount of a compound having the formula:



wherein R_1 is mercapto, R_2 is a C_1–C_4 alkyl, R_3 is a C_1–C_4 alkyl, and R_4 is hydrogen.

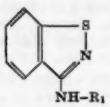
3,849,568

ANTIMYCOTIC BENZISOTHIAZOLINE DERIVATIVES

Horst Boshagen, Haan, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft

No Drawing. Application June 10, 1971, Ser. No. 151,929, which is a continuation-in-part of abandoned applications Ser. No. 566,199, July 19, 1966, and Ser. No. 783,756, Dec. 13, 1968. Divided and this application July 12, 1973, Ser. No. 378,520
Claims priority, application Germany, July 29, 1965, F 46,742
Int. Cl. A61k *27/00*
U.S. Cl. 424—270 **30 Claims**

1. An antimycotic composition comprising a pharmaceutical carrier in combination with an antimycotically effective amount of a compound selected from the group consisting of (a) a benzisothiazole of the formula:



wherein R_1 is alkyl of form 1 to 7 carbon atoms, chloroalkyl of 1 to 7 carbon atoms, benzyl, cyclohexyl, methylcyclohexyl, phenyl or phenyl substituted by halogen, nitro, lower alkyl, lower alkoxy or di(lower alkyl) amino and (b) a salt thereof with a strong acid.

3,849,569

COMPOSITION CONTAINING PROCAINE PENICILLIN

Robert James Mead, Barnard Castle, England, assignor to Glaxo Laboratories Limited, Greenford, Middlesex, England

No Drawing. Continuation of application Ser. No. 106,912, Jan. 15, 1971, which is a continuation of application Ser. No. 837,980, Apr. 30, 1969, which in turn is a continuation of application Ser. No. 511,229, Dec. 2, 1965, all now abandoned. This application Jan. 30, 1973, Ser. No. 328,063
Claims priority, application Great Britain, Jan. 20, 1966, 50,579/66
Int. Cl. A61k *21/00*
U.S. Cl. 424—271 **1 Claim**

1. A non-aqueous antibiotic composition for intramammary use consisting essentially of from about 3.33%–10% by weight of procaine penicillin G, from about 1%–3% by weight of procaine base as stabilizing agent for said procaine penicillin G and from about 2%–3% of polyoxyethylene sorbitan monooleate in a vegetable oil base.

3,849,570

METHOD OF TREATING CARDIAC ARRHYTHMIA WITH 2-(2'-DIETHYLAMINOETHYL) - 3-PHENYL-PHTHALIMIDINE AND ITS SALTS

Manfred Raschack, Dannstadt, and Oskar Bub, Ludwigshafen, Germany, assignors to Knoll A.G. Chemische Fabriken, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 6, 1973, Ser. No. 338,546

Claims priority, application Germany, Apr. 1, 1972, P 22 16 065.2

Int. Cl. A61k 27/00

U.S. Cl. 424—274 2 Claims

1. The method of treating cardiac arrhythmia in a patient suffering therefrom which comprises orally administering to said patient about 200–300 mg. per day of a member selected from the group consisting of 2-(2'-diethylaminoethyl)-3-phenyl-phthalimidine and salts thereof with physiologically tolerable acids.

3,849,571

INSECTICIDAL COMPOSITIONS CONTAINING CERTAIN TERPENE ETHERS AND PYRETHRINOIDS

Carl Bordenca, Ponte Vedra Beach, and John M. Derfer, Jacksonville, Fla., assignors to SCM Corporation, Cleveland, Ohio

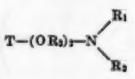
No Drawing. Application July 26, 1968, Ser. No. 747,830, now Patent No. 3,626,011, which is a division of application Ser. No. 607,876, Jan. 9, 1967, now Patent No. 3,446,843, which in turn is a continuation-in-part of abandoned application Ser. No. 479,009, Aug. 11, 1965. Divided and this application Jan. 11, 1971, Ser. No. 105,672

The term of this patent subsequent to May 27, 1986, has been disclaimed

Int. Cl. A01n 9/20, 9/24

U.S. Cl. 424—282 6 Claims

1. An insecticidal composition comprising (a) an insecticidally effective amount of a pyrethrinoid selected from the group consisting of pyrethrin, allethrin and 5-benzyl-3-furfuryl±cis-trans chrysanthemate; and (b) an insecticidally effective amount of a terpene ether of the formula



wherein T is terpenyl or sesquiterpenyl, R_1 and R_2 are like or dissimilar alkyl groups of 1 to 8 carbon atoms and R_3 is lower alkylene.

3,849,572

BIPHENYLENEACETIC ACID ANTI-INFLAMMATORY AGENTS

Bruce E. Witzel and Tsung-Ying Shen, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 72,531, Sept. 15, 1970. This application July 19, 1972, Ser. No. 273,232

Int. Cl. A61k 27/00

U.S. Cl. 424—304 4 Claims

1. A method of treating a condition exhibiting at least one of the symptoms of pain, fever and inflammation which comprises the administration to a patient in need of such treatment of a therapeutically effective amount of 6-cyanobiphenylene-2-acetic acid.

3,849,573

NOVEL VINYLCARBAMATE DERIVATIVES OF PHENYLPROPANOLAMINE

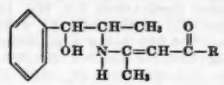
Henry Cecil Caldwell, Ambler, Pa., assignor to Smithkline Corporation

No Drawing. Original application Feb. 23, 1971, Ser. No. 118,159, now Patent No. 3,769,317. Divided and this application July 2, 1973, Ser. No. 376,057

Int. Cl. A61k 27/00

U.S. Cl. 424—311 5 Claims

1. A pharmaceutical composition having antitussive activity in dosage unit form comprising a pharmaceutical carrier and from about 10 mg. to about 100 mg. of a chemical compound of the formula:



wherein:

R is a lower alkoxy group containing from 1 to 4 carbon atoms or a di-loweralkylamino group in which the loweralkyl group contains from 1 to 4 carbon atoms.

3,849,574

α-SUBSTITUTED-β-ARYLTHIOALKYL AMINO-ACIDS, FOR INCREASING HEART RATE

John T. Suh, Mequon, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 146,534, May 24, 1971, which is a continuation-in-part of application Ser. No. 764,624, Oct. 2, 1968, both now abandoned. This application June 26, 1973, Ser. No. 373,800

Int. Cl. A61k 27/00

U.S. Cl. 424—319 1 Claim

1. The method of increasing the heart rate in an animal which comprises administering to said animal a daily dose of 0.01 to 10 mg./kg. of β-(*p*-chlorophenylthio)-α-methyl-alanine.

3,849,575

THIOSEMICARBAZONES AS ANTI-FERTILITY AGENTS

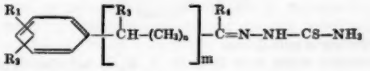
Richard L. Elton, Chester, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 187,880, Oct. 8, 1971. This application Jan. 26, 1973, Ser. No. 326,603

Int. Cl. A61k 27/00

U.S. Cl. 424—323 8 Claims

1. A method of inhibiting fertility in a female animal in which such treatment is desired comprising internally administering to such a female animal 70 to 350 mg. per day of a compound of formula (I)



wherein

R_1 and R_2, independently, are hydrogen, halogen, or alkyl of 1 to 3 carbons,

R_3 and R_4 are independently hydrogen or alkyl of 1 to 3 carbons,
m is 0 or 1, and
n is 0, 1, or 2.

3,849,576

PROCESS AND COSMETIC COMPOSITIONS FOR THE TREATMENT OF SKIN AND SCALP

Gregoire Kalopissis, Paris, France, assignor to Societe Anonyme dite: L'Oreal, Paris, France

No Drawing. Continuation-in-part of applications Ser. No. 736,960, June 14, 1968, Ser. No. 794,363, Jan. 27, 1969, Ser. No. 801,840, Feb. 24, 1969, and Ser. No. 817,193, Apr. 17, 1969, all now abandoned, Ser. No. 858,161, Sept. 15, 1969, now Patent No. 3,671,643, and abandoned applications Ser. No. 12,122, Feb. 17, 1970, and Ser. No. 36,405, May 11, 1970; said application Ser. No. 736,960 being a continuation-in-part of abandoned applications Ser. No. 427,976, Jan. 25, 1965, and Ser. No. 602,480, Dec. 19, 1966. This application Nov. 29, 1971, Ser. No. 203,046

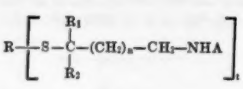
Claims priority, application France, Jan. 29, 1964, 961,897; June 21, 1967, 111,396; July 28, 1967, 116,160; Luxembourg, Dec. 22, 1965, 50,125; Feb. 23, 1968, 55,553; Jan. 29, 1969, 55,371; Feb. 19, 1969, 58,042; Apr. 19, 1969, 55,935; May 12, 1969, 58,634; Apr. 23, 1971, 63,056, 63,057; Belgium, June 3, 1969, 74,877

The term of this patent subsequent to June 20, 1989, has been disclaimed

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **14 Claims**

1. A composition for topical application to a human's scalp and skin characterized by an excessive secretion of sebum to improve the condition thereof by reducing said excessive secretion of sebum comprising a nontoxic cosmetic carrier suitable for topical application to the scalp or skin and a nontoxic active component present in amounts effective to reduce excessive secretion of sebum, said active component being selected from the group consisting of a compound of the formula:



and an acid salt thereof,

wherein n is 0 or 1 and when n is 0, R_1 and R_2 are selected from the group consisting of hydrogen and CH_3 and when n is 1, R_1 and R_2 are hydrogen;

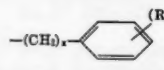
t is 1,

A is hydrogen,

R is selected from the group consisting of $—C(C_6H_5)_3$; $—CH(C_6H_5)_2$; $—CH(_6H_4p\text{-}OCH_3)_2$;

$$—C(CH_3)_2—(C_6H_4p\text{-}OCH_3);$$

$—(CH_2)_z—R_8$ wherein z is 0 or 1 and R_8 is selected from the group consisting of naphthyl-1 and naphthyl-2; and



wherein x is 0–2 and

wherein when q is 1, 2 or 3, R_9 is selected from the group consisting of hydrogen, halogen, alkoxy having 1–5 carbon atoms and linear or branched chain alkyl having 1–4 carbon atoms, and when q is 1, R_9 is selected from the group consisting of acetamido, amino, phenoxy, cyclohexyl, trifluoromethyl, nitro, phenyl, dialkylamino wherein each alkyl moiety has 1–5 carbon atoms alkylthio having 1–5 carbon atoms, alkyl-sulfinyl having 1–5 carbon atoms and alkyl-sulfonyl having 1–5 carbon atoms.

3,849,577

METHOD OF REDUCING INTRAOCULAR PRESSURE IN HUMAN EYES

Monte G. Holland, New Orleans, La., assignor to Research Corporation, New York, N.Y.

Filed May 3, 1972, Ser. No. 249,814

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **10 Claims**

1. A method of increasing the facility of outflow of fluid from human eyes and reducing the fluid in flow which comprises the steps of:

(a) Sympathectomizing said eyes by the administration thereto of sympathectomally effective amount of an ophthalmologically acceptable aqueous solution containing between 1 and 10% by weight of 6-hydroxydopamine,

(b) Administering and continuing to administer to said chemically sympathectomized eye an ophthalmologically administerable aqueous solution of from about 1 to about 2% by weight of an adrenergic amine is selected from the group consisting of amines having alpha and beta adrenergic activity, and a combination of at least one alpha adrenergically effective amine with at least one beta adrenergically effective amine.

3,849,578

ANTI-INFLAMMATORY TREATMENT

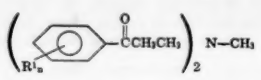
Marshall D. Draper, Woodland Hills, and Louis Levy, Encino, Calif., assignors to Riker Laboratories, Inc., Northridge, Calif.

No Drawing. Filed Feb. 28, 1973, Ser. No. 336,693

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **5 Claims**

1. A method of treating inflammatory conditions in mammals which comprises administering to said mammal an effective amount of a compound of the formula



wherein R_1 is fluorine or chlorine and n is one, or a pharmaceutically acceptable salt thereof.

3,849,579

PROCESS FOR REDUCING PICKLE BLOATING WITH DEHYDROACETIC ACID

Richard C. Hall, Cleveland, Norman D. Kidd, Middleburg Heights, and George V. Daravingas, Lakewood, Ohio, assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Filed Oct. 3, 1972, Ser. No. 294,722

Int. Cl. A23b *7/10*

U.S. Cl. 426—49 **3 Claims**

1. In a process for curing cucumbers in brine by natural bacteriological fermentation, wherein the improvement comprises:

the inclusion of 0.005% to 0.5% volume of dehydroacetic acid in the brine solution based on the total volume of brine solution and cucumbers to prevent gas and bloating of said cucumber.

3,849,580

AEROSOL DISPENSING SYSTEM FOR ANHYDROUS EDIBLE FAT COMPOSITIONS

Vasant D. Sejpal, Hoboken, and William J. Lueschen and Bernard Weinstein, North Plainfield, N.J., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Sept. 5, 1972, Ser. No. 285,992

Int. Cl. A23c *15/00*

U.S. Cl. 426—116 2 Claims

1. A dispensing system for comestible spreads not requiring refrigeration or included preservatives or corrosion inhibitors for prolonged shelf life comprising:

(A) a pressure tight container;

(B) a dispensing nozzle connected to said container;

(C) about 2 to 20 percent by total weight of a food grade propellant;

(D) about 80 to 98 percent by total weight of an anhydrous edible fat composition having a solid fat index of 5 to 30 percent at 70° F. selected from the class consisting of anhydrous butter, anhydrous solid vegetable oils and anhydrous liquid vegetable oils;

where the total weight is the weight of the propellant plus the weight of the composition.

3,849,581

EXTENDED STORAGE LIFE LETTUCE PROCESS AND PRODUCT

Stanley Kubu, Miami, Fla., assignor to Burger King Corporation, Miami, Fla.

Filed Nov. 13, 1970, Ser. No. 89,404

Int. Cl. A23l *3/34*

U.S. Cl. 426—145 18 Claims

1. A method of prolonging the shelf life of lettuce which comprises:

(a) shredding lettuce;

(b) treating the shredded lettuce with an aqueous anti-oxidant solution; and

(c) centrifugally drying said shredded lettuce to achieve partial dehydration of from about 6 to 10 percent of the original weight of the lettuce.

3,849,582

FORTIFIED SNACK PROCESS AND PRODUCT

Peter A. Blagdon, University City, Wayne R. Malzahn, Ballwin, and Huygene K. Fujiwara, Clayton, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

No Drawing. Continuation of abandoned application Ser. No. 64,553, Aug. 17, 1970. This application Feb. 5, 1973, Ser. No. 329,793

Int. Cl. A23l *1/10*

U.S. Cl. 426—152 6 Claims

1. A process for producing a crisp, fried snack food product having improved nutritional properties, improved palatability and stability on storage comprising; forming a mixture of water, a pregelatinized starch, and a soy protein isolate which has not been subjected to the gelling action of heat whereby said mixture contains between about 30 to 48% water, between about 41 to 49% pregelatinized starch, between about 16 and 25% protein and between about 0.25 and 4.0% of a starch modifying and complexing agent; forming the mixture into a shaped food product without heat gelling of the protein isolate, stretching the formed food product to elongate said product to between about 25 to 100% of its original length, and frying the elongated and shaped product to provide the product with an improved crisp texture which is substantially free of large, hollow, balloon-like bubbles.

3,849,583

METHOD OF PRODUCING A FONDANT PRODUCT

Andreas Marinus Aartsen, Barendrecht, Netherlands, assignor to Cooperatieve Vereniging Suiker Unie U.A., Rotterdam, Netherlands

No Drawing. Filed June 19, 1972, Ser. No. 263,947

Claims priority, application Netherlands, June 21, 1971, 7108468

Int. Cl. A23g *3/00*

U.S. Cl. 426—162 8 Claims

1. The method of producing a dry fondant product capable of admixture with liquid to form a sugar glaze which will not flow away incidental to thawing after having been frozen, which comprises the steps of:

(a) forming an emulsifiable fat component which is a mixture of a hard fat with a liquid oil and emulsifier having a melting point of between 20 and 40° C.; and

(b) bringing the temperature of the fat component above its melting point, thereby forming a liquid; and

(c) blending the liquid fat component of step (b) with a dry, granular fondant sugar component for a time sufficient to produce the dry fondant product in which the dry fondant product contains from 5–10% of the liquid fat component based by weight upon the amount of sugar component;

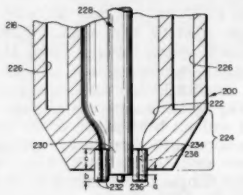
said dry fondant sugar component being obtained by providing a sugar solution which comprises, first concentrating such solution by cooking to reach a solids content of 90 to 95%; then admixing thereto 30 to 70% (calculated on total mixture) of finely divided sugar particles having for the major part a size not exceeding 40 microns; then breaking and cooling the mixture, and drying it during mixing, breaking and cooling to reach a moisture content of about 2% by weight.

ELECTRICAL

3,849,584
PLASMA ARC TORCH

Boris Evgenievich Paton, Apt. 21, 11/13, Kotsubinskogo Str.; Victor Iosifovich Lakomsky, Bastionoja, Ul. 10; Gary Alexandrovich Melnik, ul. Prazhskaya 3, kv. 169; Anatoli Ivanovich Chvertko, Blvd. Lesiga, Ukrainka 2, and Alfred Iosifovich Bukalo, Apt. 69, 8/2, Zaporozhtsa Str., all of Kiev, U.S.S.R.

Filed Oct. 24, 1973, Ser. No. 409,329
Int. Cl. H05b *7/18*
U.S. Cl. 13—9 **62 Claims**

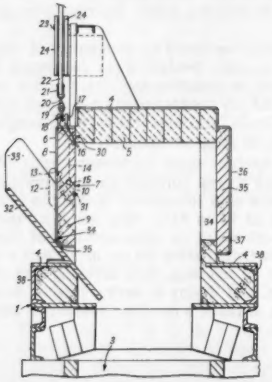


1. A plasma arc torch with a center electrode and a nozzle end structure, said nozzle end structure comprising: an elongate, hollow body coaxially surrounding and spaced from the lower end of said electrode; a plurality of circumferentially spaced apart electrically conductive heat sink inserts mounted in the interior of said body, around and radially spaced from said electrode, each said insert having a first portion radially adjacent said electrode lower end and second portion axially disposed beyond the terminal end of said electrode; said body providing an annular nozzle orifice having end means defining a nozzle orifice with a smoothly curved, convergent profile surface within said body for providing a substantially laminar flow of plasma gas past said electrode and inserts.

3,849,585
FURNACES

Reginald E. Laflin, Balcombe, England, assignor to A.P.V. Paralec Limited, Crawley, Sussex, England

Filed Dec. 13, 1973, Ser. No. 424,634
Claims priority, application Great Britain, Dec. 21, 1972, 59066/72
Int. Cl. F27d *1/18*
U.S. Cl. 13—26 **14 Claims**

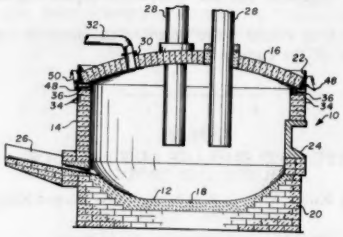


1. A static non-tipping electric induction furnace comprising a container in which metal to be melted is loaded, said container having an open upper end and a cover which extends over the upper end, said cover having at one side thereof a doorway defined by a door sill, a charging door, mounting means mounting said door for movement between an open position spaced from said door sill and a closed position engaging said door sill, said mounting means including guide means operable during the initial opening movement of the door for moving the door laterally bodily away from the door sill and then in a linear direction substantially parallel to the door sill.

3,849,586
ELECTRIC ARC FURNACES AND REFRACTORY SHAPES THEREFOR

Louis John Jacobs, Chicago, Ill., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 20, 1974, Ser. No. 444,193
Int. Cl. F27d *1/04*
U.S. Cl. 13—32 **3 Claims**

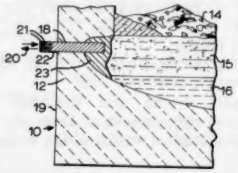


1. In an electric arc furnace having a side wall, a roof and a fume vent in said roof, the improvement comprising a series of refractory brick forming a row around said sidewall adjacent the top of said sidewall, each of said refractory bricks including two side faces abutting the adjacent refractory bricks in said row, each of said side faces of said refractory bricks having a groove formed therein, said grooves in abutting faces of adjacent refractory bricks coinciding so as to form channels through said row of refractory bricks extending from outside said furnace to inside said furnace, and means for opening and closing said channels.

3,849,587
COOLING DEVICES FOR PROTECTING REFRACTORY LININGS OF FURNACES

Gerald Gordon Hatch, Toronto, and Bert Orland Wasmund, West Hill, both of Canada, assignors to Hatch Associates Limited, Toronto, Ontario, Canada

Filed Dec. 13, 1973, Ser. No. 424,564
Claims priority, application Canada, Oct. 15, 1973, 183399
Int. Cl. F27b *3/24;* **F27d** *1/12*
U.S. Cl. 13—32 **19 Claims**



1. A method for protecting the refractory lining of a furnace operating at high temperatures comprising placing solid cool-

ing members of high thermal conductivity into the lining, the outer portions of the cooling members remaining outside of the refractory lining, said cooling members being substantially devoid of water cooled channels in the portions thereof located inside the lining, and selecting the length, cross-sectional area, spacing and material of said cooling members to avoid melting thereof and to result in withdrawal of sufficient heat from the furnace lining to limit erosion of the lining.

3,849,588

METHOD OF ELECTROSLAG MELTING OF METAL INGOTS

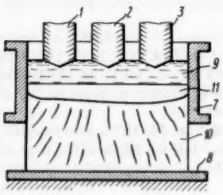
Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9, kv. 21; Boris Izrailevich Medovar, ulitsa A. Barbjusa, 22/26, kv. 109; Ilya Iosifovich Kumysh, Vozdukhoflotsky prospekt, 42, kv. 51; Anatoly Konstantinovich Tsykulenko, ulitsa Babushking, 23, kv. 38; Jury Fedorovich Alferov, bulvar Lepse, 29, kv. 64; Grigory Bentsionovich Schupak, ulitsa Chudnovskogo, 7, kv. 61; Oleg Petrovich Bondarenko, ulitsa Kreschatik, 15, kv. 36, and Alexei Georgievich Bogachenko, ulitsa Miljutenko, 15/2, kv. 141, all of Kiev, U.S.S.R.

Filed Sept. 24, 1973, Ser. No. 399,803

Claims priority, application U.S.S.R., Feb. 2, 1973, 1907050

Int. Cl. H05b *3/60*

U.S. Cl. 13—34 **12 Claims**



1. A method of electroslag melting of a metal ingot in a cooled mould from at least two consumable electrodes with each electrode being connected to an individual power source comprising the steps of: providing molten slag by establishing a slag bath in the mould; simultaneously supplying electric energy to each of the consumable electrodes having their lower ends dipped into the slag bath; forming the metal ingot in the mould in the course of melting the consumable electrodes; and alternately and repeatedly varying the current and voltage applied to each of the consumable electrodes.

3,849,589

CURRENT FEEDING ARRANGEMENT FOR ELECTRICAL APPARATUS HAVING LOW TEMPERATURE COOLED CONDUCTORS

Fritz Schmidt, Erlangen; Gunther Matthaus, Spardorf, and Peter Massek, Forchheim, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

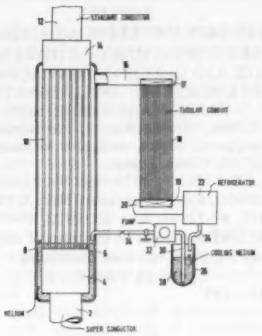
Continuation of Ser. No. 314,565, Dec. 13, 1972, abandoned. This application Dec. 4, 1973, Ser. No. 421,693

Claims priority, application Germany, Dec. 20, 1971, 2163270

Int. Cl. H01v *11/00*

U.S. Cl. 174—21 R **10 Claims**

1. A current feeding arrangement for electrical apparatus having conductors, cooled to a low temperature, connected to a standard conductor by a connecting means, in which the connecting means is contained in a container and is cooled by a gasified liquid coolant, the improvement comprising connecting the end of the container located at the end of the connecting means disposed away from the conductor cooled



to a low temperature, to a plurality of flow channels each having at least two walls covered by an electrical insulating material, and separated by a displacement of not more than 30 mm.

3,849,590

GAS FILLED ELECTRICAL BUSHING WITH CONCENTRIC INTERMEDIATE ELECTRODES

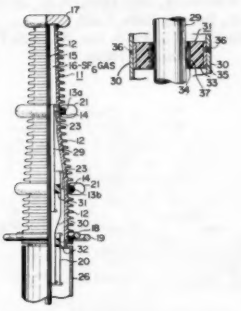
Jun Ozawa; Tokio Isogai; Toshio Ishikawa; Tokio Yamagiwa; Mutsuo Matsumura, all of Hitachi; Zenichi Nakano, Yokohama, and Shigeru Fuziya, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 25, 1973, Ser. No. 409,460

Claims priority, application Japan, Nov. 1, 1972, 47-108822

Int. Cl. H01b *17/28*

U.S. Cl. 174—31 R **13 Claims**



1. A gas filled-bushing comprising an insulator including at least three stacked insulator units, at least two splicer means hermetically joining each of said insulator units, insulating gas inserted in an inner space of said insulator, a control conductor means disposed at the center of said insulator for providing a current path, and at least a pair of cylinder-shaped intermediate electrodes arranged concentrically with said central conductor and electrically connected to said splicer means, said intermediate electrodes having at least a portion thereof opposed to each other, at least one intermediate electrode other than the electrode disposed nearest to said central conductor means including a portion extending below the terminus of the intermediate electrode disposed nearest to said

central conductor means, said last-mentioned portion of said intermediate electrode having a diameter smaller than the portion thereof opposed to said intermediate electrode disposed nearest to said central conductor means.

3,849,591

LAMINATE TAPE INCLUDING AN ADHESIVE RESIN TERNARY COPOLYMER OF ETHYLENE, VINYL ACETATE AND GLYCIDYL METHACRYLATE OR GLYCIDYL ACRYLATE AND LAMINATE SHEATH CABLE MADE THEREFROM

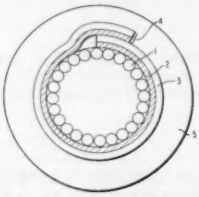
Terumichi Ichiba; Hiroshi Shimba, and Hiroaki Mukunashi, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed Mar. 1, 1973, Ser. No. 337,048

Claims priority, application Japan, Mar. 3, 1972, 47-22630; Mar. 3, 1972, 47-22631; May 13, 1972, 47-47334; May 13, 1972, 47-47336The portion of the term of this patent subsequent to July 30, 1991, has been disclaimed.

Int. Cl. H01b *7/18*

U.S. Cl. 174—107 **10 Claims**



1. A laminate tape comprising a metal tape and a resin which is a ternary copolymer composed of ethylene, vinyl acetate and glycidyl methacrylate or glycidyl acrylate, said resin being laminated on one or both surfaces of said metal tape.

3,849,592

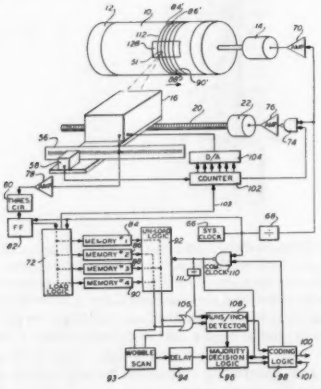
GRAPHIC DATA REDUNDANCY REDUCTION FOR TEXT AND HALF-TONE OPTICAL FACSIMILE SYSTEM

Bernard M. Rosenheck, Dix Hills, N.Y., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Feb. 5, 1973, Ser. No. 329,760

Int. Cl. H04n *1/32*

U.S. Cl. 178—6 **11 Claims**



1. A facsimile system for transmitting and receiving data representing black and white text and half-tone areas upon a document, comprising:

means for optically scanning adjacent transverse areas of said document and converting each black and white and half-tone area within each scanned transverse area of said adjacent transverse areas of said document into digital signals;

a plurality of memory means each storing said digital signals representing areas within one of said scannned transverse areas of said document;

detector means for detecting the number of variations within said digital signals;

selection means connected to said memory means to receive digital signals from more than one memory means and thereby more than one scanned adjacent transverse area at a time;

said selection means including means for averaging said stored digital signals representing scanned adjacent transverse areas of said document from said more than one memory means when said detected variations within said digital signals are few thereby areally compressing said stored digital signals for transmission and reception;

said selection means further including means for alternately selecting between said stored digital signals representing said scanned adjacent transverse areas of said document from said more than one memory means when said detected variations within said digital signals are numerous thereby passing said digital signals for transmission and reception.

3,849,593

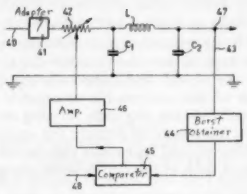
AMPLITUDE CORRECTOR FOR THE CHROMINANCE COMPONENT OF A COLOUR TELEVISION SIGNAL

Roger Brun, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 10, 1973, Ser. No. 349,792

Int. Cl. H04n *9/12, 9/46*

U.S. Cl. 358—27 **7 Claims**

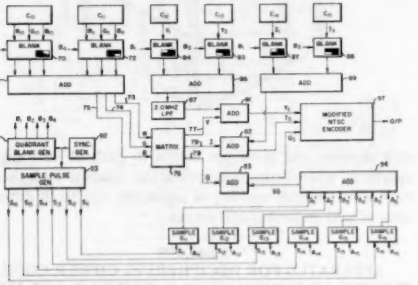


1. A corrector circuit for a television signal having a chrominance component, said circuit comprising an adapter having an input means for receiving said signal and an output having a negligable output impedance; a variable resistance means coupled to said adapter output and having a control input; a pi-type low pass filter having an input capacitor coupled to said variable resistance means, an inductor coupled to said input capacitor, and an output capacitor coupled to said inductor, said inductor and said output capacitor being resonant at the frequency of said chrominance component; means coupled to said output capacitor for obtaining a chroma burst from said component; and a comparison means having a first input means coupled to said obtaining means, a second input means for receiving a reference potential, and an output coupled to said control input.

3,849,594
MULTI-PICTURE TV SYSTEM WITH AUDIO AND DODING CHANNELS

James W. H. Justice, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 364,166
Int. Cl. H04n 7/04
U.S. Cl. 178—5.6 15 Claims



1. An apparatus for transmitting a plurality of separate pictures or scenes and a plurality of audio signals using modulated subcarriers on a single TV carrier signal such that at least two scenes are transmitted for display in certain of four quadrants of a television receiving tube, the combination comprising:

means for producing a plurality of video signals corresponding to said separate scenes,

blanker means for limiting the scenes represented by said video signals for display in a predetermined quadrant of a television receiving tube,

means for producing at least two video summation signals, each comprising at least two of said blanked video signals, means for sampling a plurality of audio signals to provide a plurality of audio signal bursts,

means for producing an audio summation signal from said audio signal bursts; and

encoder means receiving said two video summation signals and said audio summation signal for modulating one of said video summation signals and said audio summation signal onto separate phase displaced subcarriers for transmission with the other of said video summation signals on a single television carrier signal.

3,849,595
FACSIMILE SIGNAL TRANSMISSION SYSTEM

Tatsuo Ishiguro, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Sept. 27, 1973, Ser. No. 401,300
Claims priority, application Japan, Sept. 28, 1972, 47-97352
Int. Cl. H04n 7/12
U.S. Cl. 178—6 4 Claims

STATE NO.	X_1	X_2	X_3	0° COMP.	90° COMP.	p		q	
0	0	0	0	0	0	0	0	0	0
1	0	0	1	+1	0	0	1	0	0
2	0	1	0	+1	+1	0	1	0	1
3	0	1	1	0	+1	0	0	0	1
4	1	0	0	0	0	0	0	0	0
5	1	0	1	−1	0	1	1	0	0
6	1	1	0	−1	−1	1	1	1	1
7	1	1	1	0	−1	0	0	1	1

1. A facsimile signal transmission system comprising:

a transmitting apparatus including:

means for converting an input binary facsimile signal to a first binary code signal indicating state numbers succeedingly and periodically assigned to the alternatively generated two levels of said input binary facsimile signal;

odd state numbers being assigned to one of the levels of said facsimile signal and even state numbers to another of the levels of said facsimile signal;

means for generating from said first binary code signal a second binary code signal changing from one to another codes every time said state numbers change from an odd number to an even number;

means for generating from said first binary code signal a third binary code signal changing from one to another codes every time said state numbers change from an even number to an odd number;

means responsive to said second and third binary code signals for generating two kinds of amplitude-indicating signals, each indicating at least three kinds of amplitudes; and

means for quadrature-amplitude-modulating quadrature carriers with said two kinds of amplitude-indicating signals thereby to transmit the quadrature-amplitude-modulated signal via a transmission line to a receiving apparatus; and

said receiving apparatus including:

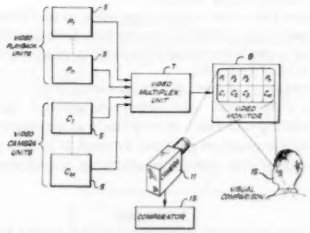
means for quadrature-amplitude-demodulating the received quadrature-amplitude-modulated signal thereby to generate two kinds of amplitude-indicating signals; means for converting the last-mentioned two kinds of amplitude-indicating signals to two kinds of binary code signals corresponding to said second and third binary code signals; and

means responsive to the last-mentioned two kinds of binary code signals for regenerating said input binary facsimile signal.

3,849,596
METHOD FOR COMPARISON USING SIMULTANEOUS DISPLAYS ON A VISUAL MONITOR

Lu Lawrence, 1024 N. Lincoln, Fullerton, Calif.

Filed Aug. 9, 1971, Ser. No. 170,202
Int. Cl. H04n 7/18
U.S. Cl. 178—6.8 4 Claims



1. A method for comparative analysis wherein a plurality of pictorial scenes are simultaneously displayed on the screen of a video monitor for comparison, comprising the steps of:

recording at least one video signal containing information for creating at least one reference pictorial scene of a given subject;

activating the video monitor screen for separately displaying said at least one reference pictorial scene;

generating video information for creating at least one comparison pictorial screne of said given subject, said at least one comparison pictorial scene presenting said given subject at times different from said at least one reference pictorial scene; and

activating the video monitor screen for separately displaying said at least one comparison pictorial scene whereby said reference and comparison pictorial scenes are produced separately and simultaneously on the video monitor screen for comparison of said given subject.

3,849,597

SIMULATOR VISUALIZATION DEVICE

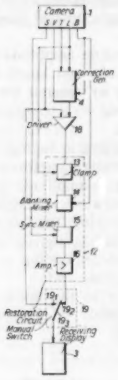
Philippe Y. J. Paris, Fontenay-aux-Roses; Pierre P. A. Bougon, Elancourt, and Lucien Guimard, Montrouge, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 358,055

Claims priority, application France, May 5, 1972, 72.16098

Int. Cl. H04m *7/18*

U.S. Cl. 178—6.8 **6 Claims**



1. In a vehicle operator training device which includes a closed circuit television arrangement having at least one display and a camera mounted to view a scene simulating that which would be presented to said vehicle operator under natural conditions, the combination comprising:

means within said camera for providing at least video and scan timing signal outputs;

correction generator means responsive to said timing signals to generate a composite correction function representative of a predetermined illumination gradient in at least one scan coordinate;

and correction driver means responsive to said camera video output and said composite control function for modulating said video in amplitude as a variable function of said illumination gradient through at least a portion of the scan of said camera in said scan coordinate.

3,849,598

TELEVISION SCREEN LIGHT SHIELD

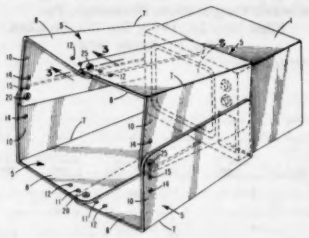
Charles C. Hoffberger, II, 2 Marina Plaza, Sarasota, Fla. 33577, and Charles A. Rivlin, 2245 Rogene Dr., Baltimore, Md. 21209

Filed Nov. 20, 1973, Ser. No. 417,611

Int. Cl. H01j *24/06;* **H04n** *5/64*

U.S. Cl. 178—7.82 **6 Claims**

1. An adjustable shield for a screen of an apparatus enabling imposition of images thereon comprising four foldable and interconnecting sections, each of said sections being of approximately the same size in overall length and width, each of said sections being adapted to be folded by folding means intermediate the width thereof thereby to be positioned in right angular configuration, each of said sections at one end thereof having an aperture on each side thereof, each of said sections when in said configuration overlapping an adjacent section that sufficient amount to place the side apertures of one section in alignment with the side apertures of the adjacent section, and pivot pin means in each of said aligned apertures, whereby said sections at the opposite ends thereof form a rectangular opening of adjustable size to fit different sizes of said apparatus and screen.



3,849,599

APPARATUS FOR DECIPHERING CIPHER CODE PRESENT AT INFORMATION CARRIERS IN THE FORM OF CHARACTER GROUPS OF THE SAME NUMBER OF DIGITS

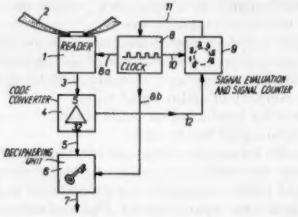
Werner Josef Senn, Buhlmattweg 13, Baar, Switzerland

Filed Nov. 8, 1972, Ser. No. 304,743

Claims priority, application Switzerland, Nov. 10, 1971, 16329/71

Int. Cl. H04l *1/00*

U.S. Cl. 178—53.1 R **5 Claims**



1. An apparatus for deciphering ciphered texts, which are present at information carriers in the form of character groups of the same number of characters, said character groups being separated from each other by control character elements, comprising a reader for the information carrier, a clocking device for driving the reader, a deciphering unit controlled both by the clocking device and the reader, a signal evaluation device controlled by said reader, said signal evaluation device producing a first output signal in correspondence to the signals of each character and a second output signal in correspondence to the control character element signals, the output sides of said signal evaluation device being connected to the input side of a signal counter operating in a cyclical manner and having a counting capacity corresponding to the number of characters of each character group, said signal counter being advanced by one step by each of said first output signals, a control circuit connected to said clocking device, said control circuit being activated each time said signal counter is advanced by one step, such that the signal evaluation device advances said signal counter by means of its second output signals from a start position to a first position and said signal counter stops said clocking device by means of said control circuit, as soon as the signal counter receives in its start position one of said first output signals and receives in any position other than the start position one of said second output signals of the signal evaluation device.

3,849,600

STEREOPHONIC SIGNAL REPRODUCING APPARATUS

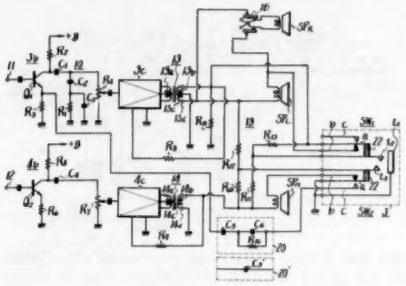
Syunji Ohshima, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 11, 1973, Ser. No. 405,426

Claims priority, application Japan, Oct. 13, 1972, 47-118493

Int. Cl. H04h 5/00

U.S. Cl. 179—1 G 13 Claims



1. A stereophonic signal reproducing apparatus comprising:

a. left and right speaker systems and a central speaker system;

b. means for applying a difference signal (L—R) proportional to the difference between left and right signals L and R and an oppositely phased difference signal (R—L) to said left and right speaker systems and for applying a sum signal (L+R) to said central speaker system to thereby produce sounds from said left, right and central speaker systems, the produced sounds being mixed acoustically in space in a matrix manner;

c. frequency characteristic compensating means for varying the reproduction frequency response of said difference signals (L—R) and (R—L) such that the level of said difference signals is relatively high in a low frequency band but relatively small in a high frequency band as compared with the level of said sum signal (L+R);

d. a matrix circuit coupled to said means for applying for mixing said difference signals (L—R), (R—L) and said sum signal (L+R) in a matrix manner to produce left and right signals L and R, respectively;

e. auxiliary output terminal means coupled to said matrix circuit and adapted to be supplied with said left and right signals L and R; and

f. means operably coupled to said auxiliary output terminal for terminating the variation in the reproduction frequency response of said difference signals.

3,849,601

VOLUME AND TONE CONTROLS FOR MULTICHANNEL AUDIO SYSTEMS

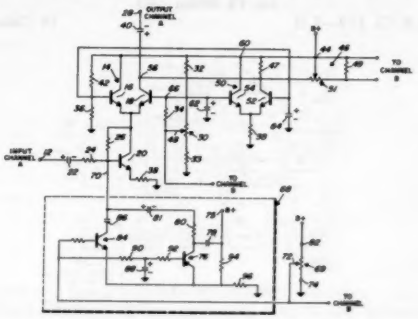
Nikolai Goncharoff, Roselle, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Oct. 9, 1973, Ser. No. 404,554

Int. Cl. H03g 5/16

U.S. Cl. 179—1 D 4 Claims

1. In an audio signal translating system including a differential amplifier having first and second transistors, one of the transistors being connected to an output terminal, a signal translating transistor component including an input and output, the output thereof being connected to the first and second transistors of said differential amplifier for applying operating current and simultaneously an audio signal path thereto, an audio signal input means coupled to the input of said signal translating transistor to provide an input signal thereto, settable volume control means coupled to said differential amplifier a predetermined portion of said audio signal being passed by said differential amplifier to said output terminal in accordance with the setting of said volume control means, a tone control circuit connected to said input of said signal translating transistor for diverting predetermined frequency components of said audio signal therefrom to adjust the tonal quality of the audio signal passed to said output terminal, said tone control circuit including in combination; tone control selector means coupled to a source of power, first and second transistor means coupled electrically to said tone control selector means and capacitor means, said tone control selector means being movable to a first setting for providing a first predetermined voltage for rendering a first one of said first and second transistor means conductive, whereby high and low frequency components of said audio signal are diverted from said signal translating transistor through said first-mentioned transistor



means, to provide a relatively flat frequency response to said audio output, to a second setting for providing a second predetermined voltage to render said first transistor means cut off, whereby high frequency components of said audio signal are diverted from said signal translating transistor through said capacitor means to provide a bass boost to said audio output and to a third setting for providing a third predetermined voltage for rendering said second transistor means conductive while maintaining said first transistor means cut off, whereby additional high frequency components of said audio signal are diverted from said signal translating transistor through said second transistor means while also diverting other high frequency components of said audio signal through said capacitor means, to provide a treble cut effect to said audio output.

3,849,602

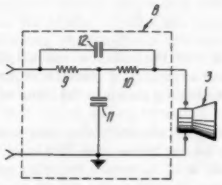
EARPHONE WITH FREQUENCY CORRECTION

Gennady Semenovich Gendin, Proletarsky prospekt, 50, kv. 20, Moscow, U.S.S.R.

Filed Dec. 23, 1971, Ser. No. 211,545

Int. Cl. H04r 3/08, 1/28

U.S. Cl. 179—1 D 5 Claims



1. An earphone comprising a case; an electroacoustic transducer adapted to reproduce sound in the audio frequency range, said transducer having an input for receiving an audio-frequency signal; an electric filter accommodated in said case and connected in series in the transmission path of said audio-

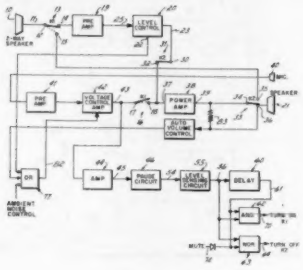
frequency signal, said transducer having a mid-band frequency of about 1,000 Hz and attenuated output in both high and low frequency ranges, said filter being effective in the mid-band frequency of the transducer for attenuating said mid-band frequency to compensate for the attenuation of low and high frequencies and provide a substantially linear overall radiation characteristic within the assigned audio-frequency band.

3,849,603

REMOTE BANKING INTERCOM SYSTEM

Steve Proios, Northvale, N.J., assignor to The Mosler Safe Company, Hamilton, Ohio

Filed Oct. 30, 1972, Ser. No. 302,253
Int. Cl. H04m *1/00*
U.S. Cl. 179—1 H **16 Claims**



1. An intercommunication system for a remote banking installation comprising:

speech transducing and sound reproduction means located at a customer location;

a microphone and a speaker located at a teller location, said microphone and speaker being separate electrical components;

an amplifier means with an input and an output; and

a switching means responsive to teller signals at a first nonzero level output from said microphone produced by speech input to said microphone at a first acoustic loudness to establish a first switching configuration and responsive to teller signals from said microphone at a second nonzero level less than said first level produced by speech input to said microphone at a second acoustic loudness less than said first acoustic loudness to establish a second switching configuration, said second nonzero signal level being sufficient in magnitude to permit, upon amplification by said amplifier means, audible reproduction thereof by said customer sound reproduction means, said first switching configuration providing an electrical connection from the output of said amplifier to said customer sound reproduction means and an electrical connection from said microphone to the input of said amplifier to permit the teller to talk to the customer and said second switching configuration providing an electrical connection from the output of said amplifier to said teller speaker and an electrical connection from said customer speech transducing means to the input of said amplifier to permit the customer to talk to the teller, said switching means being unresponsive to a decrease in teller speech signals to a level below said first level, but in excess of said second level, to permit the teller speech signals output from the microphone to drop below said first level to a level exceeding said second level without changing said switching configuration,

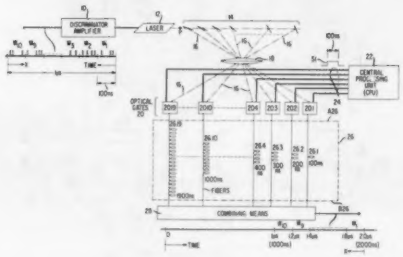
said switching means being operative normally in said second switching configuration to facilitate communication from said customer to said teller without the switching of said switch means.

3,849,604

TIME-SLOT INTERCHANGER FOR TIME DIVISION MULTIPLEX SYSTEM UTILIZING ORGAN ARRAYS OF OPTICAL FIBERS

Vaclav Edvard Benes, Berkeley Heights, and Michel Albert Duguay, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 28, 1973, Ser. No. 401,632
Int. Cl. H04j *3/00;* **H04b** *9/00*
U.S. Cl. 179—15 AQ **7 Claims**



1. In a time division multiplex communication system in which information is carried in the form of signal pulses in a plurality j of time-wise sequential time slots or words on an input signal path, apparatus for permuting said words to produce a predetermined sequence of said words on an output signal path, comprising:

generating means for producing from each of said signal pulses a plurality of at least $(2j - 1)$ optical sub-pulses each propagating along spatially separate paths,

a plurality of at least $(2j - 1)$ optical gates each disposed to receive a separate one of said sub-pulses, said gates being normally in an off-state which inhibits transmission of said sub-pulses therethrough,

an array of at least $(2j - 1)$ optical fibers cut to different lengths so that the difference in length between functionally adjacent fibers is uniform, one end of each of said fibers being terminated in an input plane and the opposite end of each of said fibers being terminated in an output plane, each of said one ends of said fibers being in registration with a separate one of said gates,

means for combining on said output signal path the optical sub-pulses emerging from the output plane of said array, and

control means for applying to predetermined ones of said gates control signals effective to switch said gates to an on-state for a time period approximately equal to the duration of a time slot, said control signals being applied to said gates so that at prescribed times preselected words are coupled to preselected fibers, thereby to delay the sub-pulses in each of said words by a predetermined amount effective to permute said words and to produce said sequence on said output signal path.

3,849,605

SOLID STATE CONTINUITY CHECK CIRCUIT

Stanley L. Russell, West Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

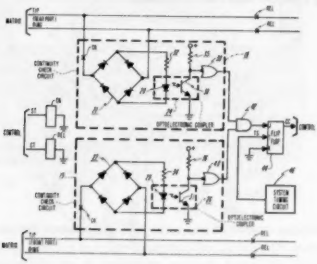
Filed Dec. 29, 1972, Ser. No. 319,245
Int. Cl. H04m *3/02*
U.S. Cl. 179—16 AA **8 Claims**

1. A continuity check circuit for common control telephone systems for connection to the tip and ring leads of a telephone circuit for detecting the presence of a potential across the tip and ring leads, said continuity check circuit comprising:

a semiconductor device including an input circuit having a radiation source that generates photon radiation, the

intensity of which is a function of the current flow therethrough, and an output circuit having a radiation sensitive device, the impedance of which is a function of the intensity of radiation from said source, said input and output circuits being electrically isolated, and

circuit means for connecting, in response to the application

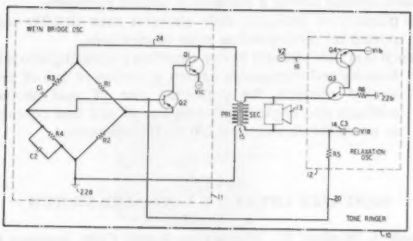


thereto of a signal from the common control, said input circuit of said semiconductor device to the tip and ring leads of a telephone circuit so that in response to a potential being present across said tip and ring leads said input circuit is rendered conductive to produce a continuity check signal from said output circuit.

3,849,606
TONE RINGER

Kenneth Joseph Roberge, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 14, 1973, Ser. No. 369,937
Int. Cl. H04m *19/02*
U.S. Cl. 179—84 T **8 Claims**



1. A telephone set tone ringer comprising

a transducer responsive to electrical signals of audio frequency for producing audible tones,

means for generating a plurality of first electrical pulses which are applied to said transducer and produce a like plurality of audible clicks, and

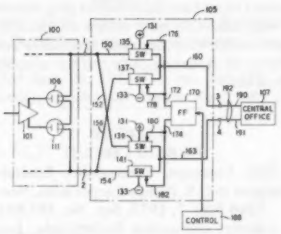
a first oscillator responsive to each of said first pulses for providing an audio frequency signal pulse output which is also applied to said transducer to produce an audio tone pulse.

3,849,607
POLARITY REVERSAL SWITCHING CIRCUIT

Robert Lawrence Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 2, 1973, Ser. No. 356,317
Int. Cl. H03k *17/00*
U.S. Cl. 179—86 **15 Claims**

1. A voltage polarity reversal switching circuit comprising a first and second terminal pair, a third and fourth terminal pair, a first d.c. voltage source, a second d.c. voltage source, control means for producing first and second control signals, first means connected to said first d.c. voltage source and said first and third terminals responsive to said first control signal for establishing a signal path between said first and third terminals and for supplying said first d.c. voltage from said first d.c. voltage source to said first and third terminals, second means connected to said second d.c. voltage source and said second and fourth terminals responsive to said first control signal for establishing a signal path between said second and fourth terminals and for supplying said second d.c. voltage from said second d.c. voltage source to said second and fourth terminals, third means connected to said first d.c. voltage

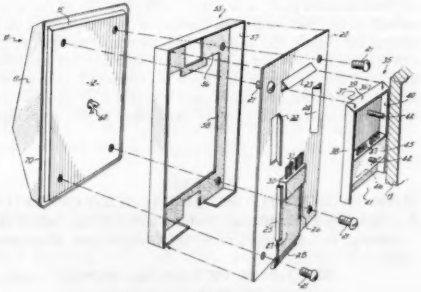


source and said first and fourth terminals responsive to said second control signal for establishing a signal path between said first and fourth terminals and for supplying said first d.c. voltage from said first d.c. voltage source to said first and fourth terminals, and fourth means connected between said second d.c. voltage source and said second and third terminals responsive to said second control signal for establishing a signal path between said second and third terminals and for supplying said second d.c. voltage from said second d.c. voltage source to said second and third terminals whereby the d.c. voltage polarity across said first and second terminal pair remains invariant and the voltage polarity across said third and fourth terminal pair is reversible.

3,849,608
TELEPHONE MOUNTING STRUCTURE

Rafael T. Bustos, Atlanta, and James A. Leach, Mountain Park, both of Ga., assignors to Leggett & Platt Incorporated, Carthage, Mo.

Filed Nov. 12, 1973, Ser. No. 414,873
Int. Cl. H04m *1/04*
U.S. Cl. 179—146 R **51 Claims**



1. Improved mounting apparatus of the type for mounting a telephone set to a wall surface and for connecting the set to established telephone system circuitry, said apparatus comprising:

a wall bracket having a substantially flat forward face and rearwardly extending flanges on the top and two sides thereof,

said bracket being mounted on a wall surface and forming an enclosure with respect thereto,

said enclosure having an opening between the bottom of the forward face of said bracket and the wall surface,

first plug means having connectors disposed within said enclosure, spaced from and accessible from said opening, said connectors being connected to said telephone system circuitry,

a telephone set mounting plate connected to said telephone set,

second plug means mounted on said mounting plate for movement with respect thereto and being electrically connected to said set, said second plug means for cooperating with said first plug means to electrically connect said set to said circuitry, and releasably connecting the telephone set mounting plate and the telephone set to the wall bracket.

3,849,609

HYBRID CIRCUIT

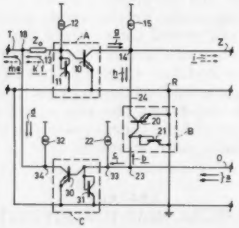
Johannes Otto Voorman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 357,801

Claims priority, application Netherlands, June 15, 1972, 7208148

Int. Cl. H04b *1/58*

U.S. Cl. 179—170 NC **4 Claims**



1. A hybrid circuit for coupling a two-way transmission path to a one-way transmission path and a one-way receiving path, of the type wherein a first amplifier has an input connected to the receiving path and an output connected to the two-way transmission path, a second amplifier has an input connected to the two-way transmission path and an output connected to the transmission path, and a third amplifier has an input connected to the receiving path and an output connected to the transmission path, the improvement wherein the first, second and third amplifiers are current-controlled current amplifiers, wherein a constant current source is connected to an input of at least one of the amplifiers, and wherein a constant current source is connected to at least one output of the amplifiers.

3,849,610

SLIDE SWITCH WITH INDIVIDUAL SLIDE OPERATORS

Joseph Larue Lockard, and William Henry Rose, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed July 19, 1973, Ser. No. 380,922

Int. Cl. H01h *15/24, 3/42*

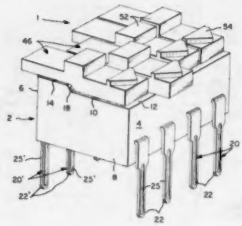
U.S. Cl. 200—5 R **7 Claims**

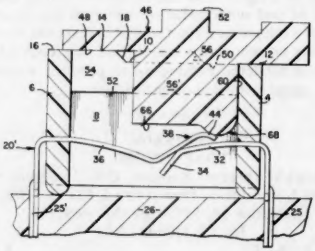
1. A slide switch, comprising:

a housing,

a plurality of first contacts in a first row mounted in said housing with portions of the first contacts protruding from the housing to form first electrical terminals for pluggable connection externally of said housing,

a plurality of second contacts in a second row mounted in said housing with portions of the second contacts protruding from the housing to form second electrical terminals for pluggable connection externally of said housing, said second contacts each having an end portion overlying one of said first contacts,





said housing having a plurality of spaced partitions,

a plurality of dielectric slide elements each slidably supported on corresponding pairs of partitions,

each said slide element having a portion protruding into said housing and engageable against a portion of one of said second contacts for deflecting one of said second contacts into engagement with one of said first contacts to complete an electrical circuit therebetween.

3,849,611

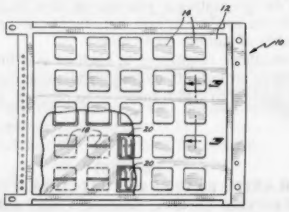
MANUALLY OPERABLE KEYBOARD SWITCH ASSEMBLY

Frank A. Walker, Jr., Huntington Beach, Calif., assignor to Controls Research Corporation, Santa Ana, Calif.

Filed May 21, 1973, Ser. No. 361,980

Int. Cl. H01h *13/70*

U.S. Cl. 200—5 A **25 Claims**

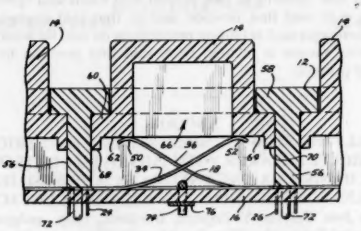


1. A manually operable keyboard switch assembly comprising, in combination:

keyboard housing defining a pattern of key-receiving channels;

an elongate contact bar stationarily disposed crosswise on the bottom of each of said channels;

a key received in each of said channels for limited movement toward and away from the contact bar associated with the respective channel; and



spring contact means fixedly mounted between multisection mounting means in each channel for urging an associated key normally to a position spaced from its associated contact bar, each spring contact means including at least a pair of spring leaves disposed in staggered, straddling relating to the associated contact bar and rising over in crossing relation above the contact bar into engagement with the associated key.

3,849,612

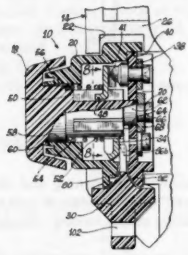
VEHICULAR ROTARY ELECTRICAL SWITCH ASSEMBLY WITH REMOVABLE, INTERPOSED NON-CONDUCTIVE PLUG KILL SWITCH MEANS

Jesse M. Cobb, Glenview, and William J. Schaad, Winnetka, both of Ill., assignors to Indak Manufacturing Corp., Northbrook, Ill.

Filed Aug. 1, 1973, Ser. No. 384,603

Int. Cl. H01h *21/50, 27/04*

U.S. Cl. 200—11 J **15 Claims**



1. An electrical switch,

comprising a casing,

a carriage rotatably mounted in said casing,

a contactor plate mounted on one end of said carriage and rotatable therewith,

a plurality of contact points mounted in one end of said casing opposite said contactor plate for engagement by said plate, and

resilient means biasing said contactor plate toward said contact points,

said plate having a first portion conductively engaging a first one of said contact points throughout the range of movement of said contactor plate,

said first portion having a plurality of angularly spaced recesses for receiving said one contact point with a detent action whereby said contactor and said carriage are detained in positions corresponding to the locations of said recesses,

said one contact point and said recesses being smoothly rounded and being of corresponding size such that said one contact point is snugly receivable in each of said recesses with a precise positioning action,

said contactor plate having a contact segment for engaging a second of said contact points in at least one of said positions,

said contactor plate forming a closed electrical circuit between said first and second contact points in at least one of said positions.

3,849,613

TURN SIGNAL SWITCH APPARATUS FOR MOTOR VEHICLE

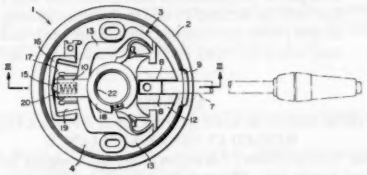
Yoshihiro Kawai, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Nishikasugai-Gun, Aichi-Pref., Japan

Filed Sept. 26, 1973, Ser. No. 401,010

Claims priority, application Japan, Sept. 28, 1972, 47-112869

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.27 **1 Claim**



1. In a turn signal switch apparatus for a motor vehicle of the type which includes a substantially cylindrical housing body with an integral transverse base wall extending horizontally therein and a pivotable actuating member mounted within said housing body for horizontal pivotal movement on the transverse base wall caused by external manipulation of a turn signal switch lever connected to said actuating member by a driver of a motor vehicle, said horizontal pivotal movement of the actuating member being conducted through elastic engagement between a distal projection of said member and an upstanding guide rib formed on and integral with the transverse base wall, the improvement comprises: an elongated opening formed in the transverse base wall adjacent the upstanding guide rib and beneath the distal projection, said opening extending over a length corresponding to the angular sweep of the distal projection; a stopper tongue integrally formed with the actuating member, said stopper tongue extending toward the upstanding guide rib from the distal end portion of the actuating member; and a guide surface provided on said upstanding guide rib in cooperating relationship with the stopper tongue, so that stopper tongue keeps abutting engagement with said guide surface, whereby preventing the distal portion of the actuating member from being raised during repeated pivotal movements of the member.

3,849,614

TAMPER SWITCH DEVICE FOR DETECTION OF RELATIVE MOTION

Colin A. Connery, New York, N.Y., assignor to Calc Securities Systems, Inc., New York, N.Y.

Filed May 14, 1973, Ser. No. 359,863

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.41 **22 Claims**

1. A device for detecting relative motion between itself and a surface upon which it may be placed comprising:

a hollow shell that is open at one end and is adapted to be placed on the surface to form an enclosure;

an element that may be secured at least temporarily to said surface within the enclosure; and

means for detecting any movement between said enclosure and said element after the element is secured to the surface,

said detecting means comprising:

a probe mounted in said shell and extending beyond the open end of said shell enough that when said open end is placed on said surface the surface pushes the probe back into the shell, and

an electro-mechanical transducer means for detecting changes in the position of said probe, and said element that may be secured to said surface comprising an end of said probe that extends beyond the open end of said shell when the open end is not placed on a surface.

3,849,615

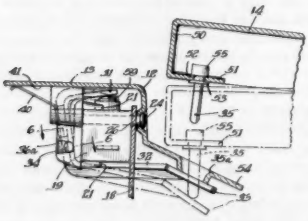
SWITCH HOLDER AND ACTUATING APPARATUS IN A HINGED CLOSURE APPLIANCE

Julian Vernon Fisher, Carpentersville, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 21, 1973, Ser. No. 417,795

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.81 **9 Claims**



1. A switch operating mechanism for a switch having an actuator means which is secured to a housing having a movable lid and a stationary member wherein retaining means retains said switch on said stationary member so that said actuator means is in proximity to a first wall of said stationary member which is substantially flush with said lid when said lid is closed and said lid carries an actuating projection which extends through an opening in a second wall of said stationary member which is inclined with respect to said first wall and which has a portion that extends behind said lid when said lid is closed comprising operating means which assumes a first position when said lid is open and a second position when said lid is closed, means for pivotly mounting said operating means so that it can pivot between said first and second positions, a first leg positioned adjacent said first wall and said actuator means, a second leg, engagement means on said second leg, a third leg joining said first and second legs and resilient means disposed between said first wall and said operating means so as to bias said operating means towards said first position when said lid is closed, said first leg being positioned above said actuator means when said operating means is in said first position and so as to depress said actuator means when said operating means is in said second position and said second leg being positioned so that said engagement means provides a seal for said opening in said second wall when said operating means is in said first position and so that said engagement means engages said actuating projections on said lid when said operating means is pivoted from said first position to said second position.

3,849,616

SELF-BLASTING COMPRESSED-GAS ELECTRIC CIRCUIT BREAKER WITH IMPROVED CONTROL MECHANISM HAVING PNEUMATIC AND RESILIENT MEANS FOR ENGAGING THE BREAKER CONTACTS

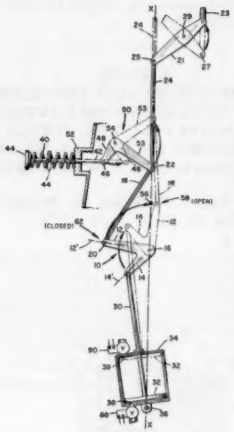
Benito Jose Calvino Y Teijeiro, Bergamo, Italy, assignor to Magrini-Fabbriche Riunite Magrini-Scarpa e Magnano M.S.M. S.p.A., Milan, Italy

Filed May 25, 1973, Ser. No. 363,896

Claims priority, application Italy, May 31, 1972, 25115/72

Int. Cl. H01h *35/38*

U.S. Cl. 200—82 R **13 Claims**



1. A control mechanism for opening and closing a circuit breaker having first and second contacts comprising

A. pneumatic actuating means having a displaceable output member,

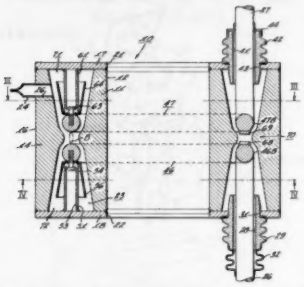
B. a kinematic linkage means comprising a rotatable element having a first end coupled to the displaceable output member of said pneumatic actuating means and a second end, and a translatable element having a first end coupled by a connecting link to the second end of said rotatable element and a second end coupled to at least one of said first and second contacts, at least a part of said rotatable element being rotated to an equilibrium position on one side of a line coincident with the longitudinal axis of said translatable element when said circuit breaker is fully open and to an equilibrium position on the other side of said line when said circuit breaker is fully closed, and

C. resilient means coupled to said translatable element, the engaging of the contacts of said circuit breaker being accomplished primarily by said resilient means and the separation of said contacts and the compression of said resilient means being accomplished primarily by said pneumatic actuating means.

3,849,617
CONSTRICTION TYPE VACUUM INTERRUPTER

Herbert M. Pflanz, Westwood, Mass., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 25, 1972, Ser. No. 300,726
Int. Cl. H01h 33/66
U.S. Cl. 200—144 B 28 Claims

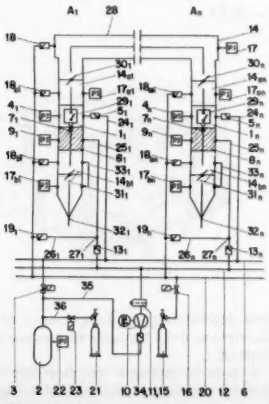


1. In a vacuum circuit interrupter;
an evacuated housing;
a pair of ring contacts in the form of incomplete toroids supported within said housing;
a pair of relatively movable contact rods extending into said housing with each contact rod being connected to an end of an associated ring contact; and,
restricting means supported in insulated relationship within said housing and operable on an arc moving between said ring contacts to effect lateral repression of an arc to prevent sidewise looping of the arc.

3,849,618
GAS SUPPLY PLANT FOR COMPRESSED GAS-INSULATED SWITCHGEAR

Karl Heinz Wagner, Mannheim-Kafertal; Reiner Muellerpoths, and Rudolf Hammel, both of Mannhein, all of Germany, assignors to Brown, Boveri & Company Limited, Baden, Switzerland

Filed May 14, 1973, Ser. No. 360,068
Claims priority, application Germany, May 16, 1972, 2223753
Int. Cl. H01h 33/80
U.S. Cl. 200—148 R 5 Claims

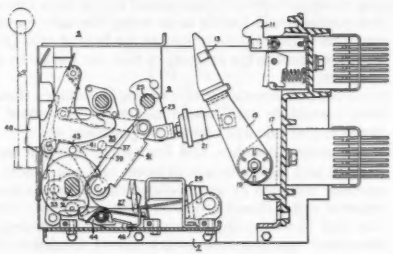


1. A switchgear plant comprising a plurality of gas-pressurized switchgear sections each of which includes a high pressure chamber containing therein a contact switching section and a low pressure chamber connected to said high pressure chamber by means of a blast valve actuatable to open position upon disengagement of the contacts of the switching section thereby to effect a discharge of arc-contaminated gas from the high pressure chamber into the low pressure chamber, a high pressure gas supply pipe common to all of said high pressure chambers and including branch pipes leading respectively therefrom to each of said high pressure chambers, each said high pressure branch pipe including a one-way valve openable automatically in the direction towards said high pressure chamber in response to a determined pressure differential across the one-way valve, a low pressure gas return pipe common to all of said low pressure chambers and including branch pipes leading respectively thereto from each of said low pressure chambers, each said low pressure branch pipe including a one-way valve openable automatically in the direction away from the low pressure chamber in response to a determined pressure differential across the one-way valve, a compressor having its inlet side connected to said common low pressure gas return pipe for withdrawing contaminated gas from said low pressure chambers and having its outlet side connected through a control valve to said common high pressure gas supply pipe and to a high pressure gas reservoir, high pressure monitoring means provided respectively for each of said high pressure chambers for separately controlling the operation of said control valve in response to a determined drop in pressure, and low pressure monitoring means provided respectively for each of said low pressure chambers for separately controlling the operation of said compressor.

3,849,619
CIRCUIT BREAKER WITH REVERSE OVERRIDE DEVICE

Nagar J. Patel, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

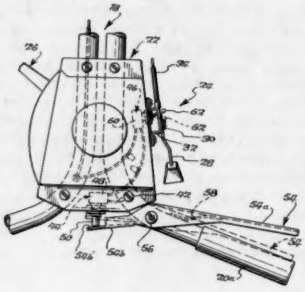
Filed June 14, 1973, Ser. No. 370,080
Int. Cl. H01h 3/30, 3/42
U.S. Cl. 200—153 SC 5 Claims



1. A circuit breaker comprising a pair of contacts operable between open and closed positions, a circuit breaker mechanism releasable to effect opening of said contacts, a trip structure for latching the circuit breaker mechanism in the closed position and for releasing said circuit breaker mechanism, said trip structure comprising a trip shaft operatively connected to said circuit breaker mechanism, a crank shaft structure operable to close said pair of contacts, closing spring means connected to said crank shaft structure, manual trip means operatively connected to said trip shaft for tripping said mechanism and comprising a trip member movable between tripped and untripped positions and biased in the untripped position, a cam on said crank shaft and operable for holding said member in the tripped position when the contacts bounce open in response to an attempt to close against fault currents that are higher than their ability to close and latch the cam having a

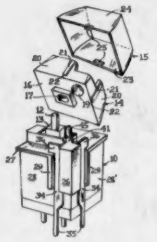
step surface engageable with said member when the closing spring means are charged, and latch means being mounted on said member for engagement with the step surface of the cam.

3,849,620
DEADMAN CONTROL
John M. Melisz, Hamberg, N.Y., assignor to Lisk Savory Corporation, Buffalo, N.Y.
Filed June 13, 1973, Ser. No. 369,708
Int. Cl. F02b *77/08;* **H01h** *9/06*
U.S. Cl. 200—157 **3 Claims**



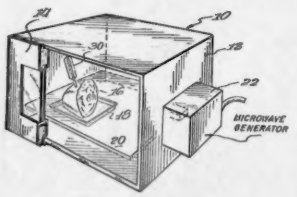
1. A power trowel comprising in combination:
a trowel drive engine mounted on a frame;
handle means fixed to extend from said frame and including a pair of handles to be gripped by an operator for manipulating said trowel;
a handle lever mounted on one of said handles for movement between first and second positions;
spring means for normally biasing said handle lever into said first position, said handle lever being manually movable into said second position against the bias of said spring means incident to the gripping of said one handle by said operator;
a speed control throttle for said engine including a throttle lever carried by said handle means for movement between engine idle and engine run positions; and
first and second switches, said first switch having a casing fixed to said handle means adjacent said one handle, an operator mounted by its associated casing for movement between switch closed condition and a switch open condition and switch spring means for normally biasing its associated operator into switch closed condition, said handle lever when in said second position having one end thereof arranged to lie closely adjacent said one handle and having another end thereof arranged in engagement with said operator of said first switch for releasably maintaining same in its switch open condition against the bias of its associated spring means, and said second switch having a casing fixed to said handle means adjacent said throttle lever, an operator mounted by its associated casing for movement between a switch closed condition and a switch open condition and switch spring means for normally biasing its associated operator into switch closed condition, said throttle lever when in engine idle position engaging said operator of said second switch for releasably maintaining same in its switch open condition against the bias of its associated spring means, said first and second switches being serially arranged within a circuit for connecting said engine to ground when the operator of both of said switches is in its switch closed condition whereby to stop said engine.

3,849,621
ILLUMINATED PUSH-BUTTON SWITCH
John W. Habecker, Waukegan, Ill., assignor to Cherry Electrical Products Corporation, Waukegan, Ill.
Filed May 9, 1974, Ser. No. 468,367
Int. Cl. H01h *9/16*
U.S. Cl. 200—310 **8 Claims**



1. An illuminated push-button switch comprising
a. a closed housing for the switch components including an actuator, one end of which is normally exposed,
b. a removable cap mounted on the exposed end of the actuator,
c. a light-transmitting cover for said cap,
d. an illuminating means mounted on said housing and adapted to project beneath said light-transmitting cover of said cap,
e. means carried externally of said housing providing electrical connections for said illuminating means,
f. means provided by said housing for attaching said electrical connecting means to the exterior thereof,
g. and means on said electrical connecting means cooperating with said means for attaching said electrical connecting means to said housing, so as to provide a socket for said illuminating means.

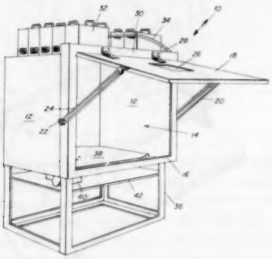
3,849,622
NON-IONIC FLUID THERMOMETER FOR MICROWAVE OVEN
Charles J. Merriam, 305 Lake Point Tower, Chicago, Ill. 60611
Division of Ser. No. 833,323, June 16, 1969, abandoned. This application Apr. 19, 1971, Ser. No. 135,344
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **4 Claims**



1. A method determining the temperature of food being heated in a microwave oven through microwave energy comprising the steps of:
providing a heat responsive thermometer being nonresponsive to microwave energy and having a hollow portion containing an expandable fluid also being nonresponsive to said microwave energy;

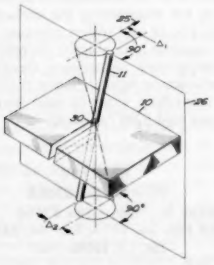
inserting the termometer into the food to be heated in a heat transferring relationship;
placing the food and thermometer into the microwave oven and heating the food by microwave energy.

3,849,623
MICROWAVE HEATING APPARATUS
Charles L. Gilliatt, Andover, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Oct. 25, 1973, Ser. No. 409,495
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **8 Claims**



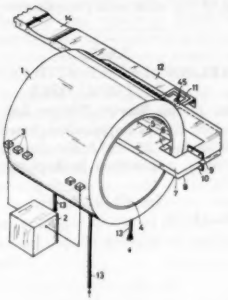
1. Microwave heating apparatus comprising:
a plurality of conductive walls defining an enclosure;
a source of electromagnetic energy having a predetermined operating frequency;
means for radiating said energy within said enclosure;
a system for supporting and moving an article to be heated within said enclosure;
said system comprising a table member and means to move said table member sequentially in orthogonal linear directions to provide substantially continuous orbital movement.

3,849,624
WIRE ELECTRODE ELECTRIC EROSION DEVICE
David H. Dulebohn, Minneapolis; Arney Landy, Jr., St. Paul, and Roy Earl Brandt, Columbia Heights, all of Minn., assignors to Andrew Engineering Company, Hopkins, Minn.
Filed May 29, 1973, Ser. No. 364,830
Int. Cl. B23p *1/12*
U.S. Cl. 219—69 V **23 Claims**



1. In combination, a tracer and tracer control device for controlling the electrically induced cutting of a workpiece, the combination comprising:
means responsive to the direction of successive portions of a line to be traced for generating a first signal indicative of the direction of said line portions and a second signal indicative of an error in said first signal;
means responsive to said second signal and operatively connected to said line portion responsive means for altering said first signal;
wire electrode means;
means for producing a relative movement between said workpiece and wire electrode means in accordance with said first signal;
means for inclining said wire electrode means within a plane; and
means responsive to said second signal for maintaining the plane of said inclined electrode means at right angles to said direction of relative movement between said workpiece and said inclined electrode means.

3,849,625
INDUCTION HEATING DEVICE
Joseph Trine, Oupeye, Belgium, assignor to Elphiac, Charleroi, Belgium
Filed June 25, 1973, Ser. No. 373,484
Claims priority, application Belgium, June 26, 1972, 4145
Int. Cl. H05b *5/06*
U.S. Cl. 219—10.79 **9 Claims**

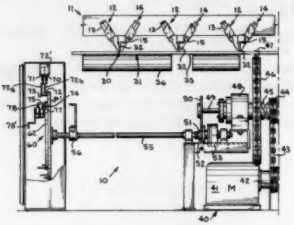


1. An induction heating device comprising:
a. a primary winding and an A.C. generator connected thereto;
b. a hollow body of insulation material in which is embedded said primary winding and which defines at least a housing for a secondary winding;
c. a secondary winding made of single curved sheet metal plate with ends thereof being directed inwardly of said curved plate and spaced from one another, said secondary winding being rotatably glidable over an angle more than 90° relative to and within said housing provided in said hollow body;
d. a pair of spaced appending members each extending from one of said plate spaced ends, a portion of said members being directed inwardly of said curved plate;
e. a layer of insulation between said appending members; and
f. a heating inductor connected to said two appending members.

3,849,626
APPARATUS FOR CONTROLLING THE WELDING PATTERN BETWEEN WELDMENT COMPONENTS

Richard Lee Linam, Leaque City, and Hilary W. Sheehan, Pasadena, both of Tex., assignors to Kelso Marine, Inc., Galveston, Tex.

Filed May 22, 1973, Ser. No. 362,780
Int. Cl. B23k *9/12*
U.S. Cl. 219—124 **4 Claims**



1. An arrangement for actuating welding guns to weld weldment components moving relative to the welding guns comprising:

a. means for supporting the weldment components;

b. means for moving the weldment components horizontally relative to the welding guns;

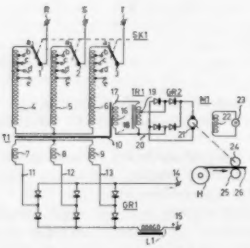
c. switch means for turning the welding guns on to weld between the weldment components and for turning the welding guns off when the weld is completed; and

d. means rotatable by said moving means for engaging said switch means to first turn the welding guns on and to then turn the welding guns off after a predetermined amount of travel of the weldment components.

3,849,627
ARC WELDING DEVICE WITH CONSUMABLE WELDING WIRE

Arthur Victor Joseph Blavier, Bierges Lez Wavre, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 20, 1973, Ser. No. 352,875
Claims priority, application Netherlands, May 24, 1972, 7206946
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 F **11 Claims**

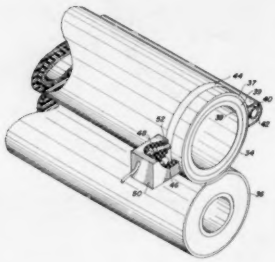


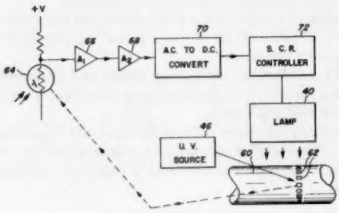
1. An arc welding device for welding work with a consumable welding wire and a direct current, comprising a multiphase welding transformer having primary windings adapted to be connected to respective phase lines of a multiphase power supply and a first group of secondary windings connected to a rectifier bridge to supple the welding current, a wire feed device including a motor coupled to drive rollers and with a reel containing consumable welding wire, the multi-phase welding transformer further comprising an auxiliary secondary winding connected to the motor and whose voltage determines the motor speed.

3,849,628
NON-CONTACT TEMPERATURE SENSOR FOR A ROLL FUSER OF A XEROGRAPHIC REPRODUCTION APPARATUS

Gerald Abowitz, Rochester; Frederick Robert Ruckdeschel, Webster, and Robert Eugene Gerace, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 25, 1973, Ser. No. 382,434
Int. Cl. H05b *1/00*
U.S. Cl. 219—216 **7 Claims**





1. Fuser apparatus comprising:

a first roller;

a second roller cooperating with said first roller to form a nip through which a substrate supporting toner material is moved;

means for heating at least one of said rollers to elevate the surface temperature thereof to a level sufficient to render the toner material tacky;

means out of contact from said at least one of said rollers for sensing the surface temperature thereof; and

means responsive to the temperature sensed for controlling said heating for maintaining the surface temperature of said at least one of said rollers constant in an area where the toner material is contacted thereby, said means for sensing temperature comprising means for converting thermal radiation to light radiation representative of said surface temperature whereby said temperature sensing means senses said light radiation.

3,849,629
TOWEL WARMER

Joseph A. Graham, Jr., Milo, Iowa 50166

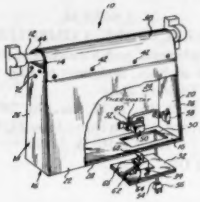
Filed Feb. 26, 1973, Ser. No. 335,738
Int. Cl. H05b *1/00*
U.S. Cl. 219—342 **4 Claims**

1. A towel warming and drying device, comprising:

a relatively tall, long, elongated and narrow closed housing of heat conducting material defining a top, bottom, narrow opposed ends and elongated opposed sides,

said top being of a lesser width than said bottom whereby said opposed elongated sides are flared outwardly from top to bottom,

an elongated inverted U-shaped bracket on said housing coextensive in length with the top thereof to provide a passageway parallel to said top whereby a towel bar or the like can be extended therethrough for supporting said housing in a depending relationship,



said bracket defining spaced parallel longitudinal edges with one of said edges secured to one sidewall of said housing and the other longitudinal edge secured to the other sidewall of said housing by removable fasteners,

said bracket and sidewalls defining a towel receiving surface when a towel is draped over the drying device, and

an electric heating component within said housing adapted for connection to a source of electricity.

3,849,630

ELECTRIC HEATING DEVICE

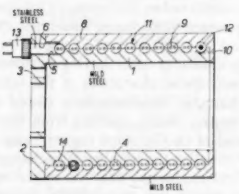
Kenneth David Halliday, South Shields, England, assignor to Pyrotenax Limited, Durham, England

Filed Oct. 18, 1972, Ser. No. 298,673

Claims priority, application Great Britain, Oct. 18, 1971, 48367/71

Int. Cl. H05b *5/58*

U.S. Cl. 219—535 **9 Claims**



1. An elongate heating device comprising a preformed elongate core having at least one helical groove in its outer surface; a separately formed sleeve of an internal diameter greater than the external diameter of said surface of the core which surrounds the core and has in its inner surface at least one helical groove that is of the same pitch as that of the groove on the core and that defines with the groove on the core a helical passage, at least one of the core and the sleeve being of a metal of high thermal conductivity; a length of mineral insulated heating cable comprising an elongate metallic sheath of high thermal conductivity, at least one elongate bare electrical heating conductor in said metallic sheath and compacted powdered mineral insulating material sealing the space between the electric heating conductor and the metallic sheath and insulating said conductor from said metallic sheath, which cable extends along the helical passage between the core and the sleeve with at least one of its ends protruding from the device, and electrical terminal means connected to each protruding end of the cable, the cable being so clamped between the core and sleeve and being of such a diameter with respect to the depth of the grooves, that part of the cable fits in the groove in the core and part of the cable fits in the groove in sleeve and that there is an effective heat transfer path between at least one of the cable sheath and the core, and the cable sheath and the sleeve.

3,849,631

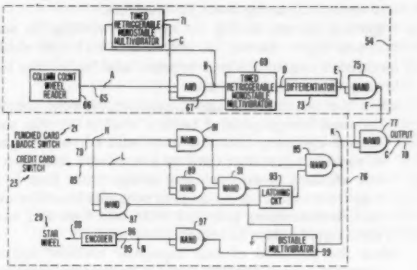
PUNCHED CARD, BADGE AND CREDIT CARD READER

Eugene Louis Merlino, Jr., Dearborn Heights; Earl Edward Brinning, Detroit, and Roger Stanley Naeyaert, Grosse Pointe Woods, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 4, 1971, Ser. No. 120,867

Int. Cl. G06k *7/015*

U.S. Cl. 235—61.11 B **20 Claims**



1. In combination with a reading apparatus having a station for reading documents and emitting pulses in response thereto, said documents having information coded thereon in rows and columns said columns having respective predetermined physical locations with respect to the leading and trailing edges of the document as it is procesed through the apparatus, the improvement therein comprising:

means for inhibiting the output of the pulses from said reading station during the continuation of the operation of said reading apparatus; and

variably positionable means actuated by the trailing edge of a document for actvating said inhibiting means immediately after the reading of a column selected form a plurality of said columns by the position of said variably positionable means.

3,849,632

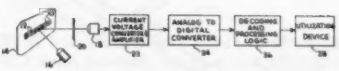
READING APPARATUS FOR OPTICAL BAR CODES

Alton B. Eckert, Jr., Norwalk, and John H. Steinmetz, South Norwalk, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Continuation of Ser. No. 264,178, June 19, 1972, abandoned. This application May 4, 1973, Ser. No. 357,353

Int. Cl. G06k *7/10*; **G08c** *9/06*

U.S. Cl. 235—61.11 E **6 Claims**



1. An apparatus for extracting width information from a linear bar code having variable width encoded elements and for impressing said information upon a width-modulated two-state signal, said apparatus comprising:

scanning means for scanning said linear bar code along a path which traverses said bar code and for generating a

video signal whose potential varies in accordance with the varying characteristics of the elements along the path;

a capacitive element having a first terminal to which said video signal is applied and also having a second terminal at which a clamped signal appears;

means for establishing a first clamping potential level at a first node and also a second clamping potential level at a second node which second clamping potential level is below the potential of said first clamping potential level, said means for establishing including means for maintaining a predetermined non-zero fixed-potential magnitude between said nodes;

first clamping means connecting to said capacitive element second terminal for preventing the potential of said capacitive element second terminal from rising above said first clamping potential level;

second clamping means connected to said capacitive element second terminal for preventing the potential of said capacitive element second terminal from falling below said second clamping potential level; and

a triggering circuit having an input connecting to said clamped signal, having an output at which the width-modulated two-state signal appears, and having the following trigger characteristic

when the potential of said capacitive element second terminal swings positive from a level at or near said second clamping potential level, said two-state signal remains in a first state until the potential of said capacitive element second terminal swings more than half-way from said second clamping potential level towards said first clamping potential level, and then said two-state signal enters its second state, and

when the potential of said capacitive element second terminal swings negative from a level at or near said first clamping potential level, said two-state signal remains in its second state until the potential of said capacitive element second terminal swings more than half-way from said first clamping potential level towards said second clamping potential level, and then said two-state signal enters its first state.

3,849,633

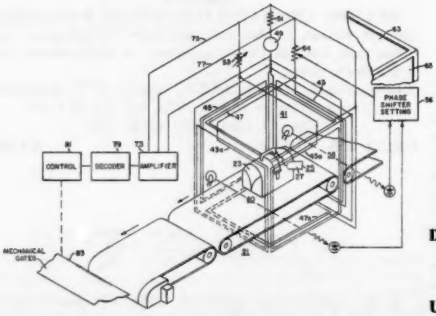
OBJECT IDENTIFYING APPARATUS

Herbert J. P. Reitboeck, and Thomas P. Brody, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 215,333, Jan. 4, 1972. This application July 17, 1973, Ser. No. 380,182

Int. Cl. G06k *19/03, 7/01;* **G01s** *9/56*

U.S. Cl. 235—61.12 N **9 Claims**



1. A label, to be subjected to an electromagnetic field while attached to an object in said field, for identifying said object, the said label including a substrate having printed thereon antenna means to be electromagnetically coupled to said electromagnetic field to absorb energy therefrom, said substrate also having printed thereon counter means, including a plurality of counters and also printed thereon, means for selectively connecting certain of said counters to said antenna means to produce a predetermined number of field-energy absorbing counts.

3,849,634

ELECTRONIC COMPUTER

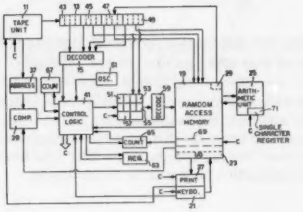
Fabrizio Saltini, Modena, and Vittorio Eccettuato, Cornaredo (Milano), both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy

Filed Sept. 11, 1972, Ser. No. 287,830

Claims priority, application Italy, June 21, 1969, 52336/69

Int. Cl. H03k *27/00*

U.S. Cl. 235—92 DP **3 Claims**



1. An electronic computer comprising:

a memory including a plurality of registers, each for storing a plurality of characters in corresponding stages, means for storing a single character, means for selecting a particular register of said plurality, means for exchanging a selected character stored in an associated stage of a selected memory register with said single character,

control logic connected to said memory for controlling said exchanging means to exchange said single character with the character at a first end of a selected register and to sequentially exchange after having performed said first exchange, successive characters of the selected register with the character simultaneously stored in the single character storing means, starting from the character at the other end of said selected register, and

a counter for counting the number of exchanges performed, after the first exchange, and for indicating when said exchanging means has sequentially exchanged all the characters of said selected register with said single character storing means, said control logic being responsive to the indication from said counter for halting the operation of said exchanging means.

3,849,635

HIGH SPEED PROGRAMMABLE COUNTER

David Daniel Freedman, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,605

Int. Cl. G06m *1/28*

U.S. Cl. 235—92 CC **6 Claims**

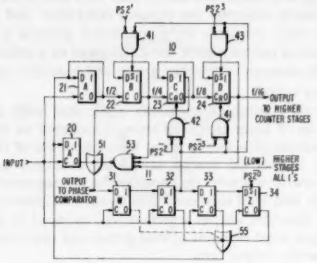
1. A high speed frequency divider responsive to a source of input signals for producing an output signal for every *k*th input signal, where *k* is a selectively defined integer, comprising:

a first counter for counting when enabled said input signals;

a second counter of modulo-*n* for counting when enabled

said input signals and producing the output signal when *n* signals have been counted;

means responsive to a count value of *k*—*n* in the first counter for enabling the second counter and disabling the first counter;



means responsive to a count value less than *n* in the second counter for modifying the count value in the first counter; and

means responsive to the output signal for enabling the first counter and disabling the second counter.

3,849,636

METHOD AND APPARATUS FOR DETERMINING THE POSITION OF A VEHICLE

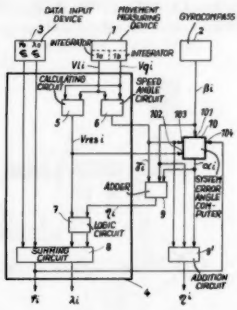
Horst Helms, Bremen, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Mar. 7, 1973, Ser. No. 338,823

Claims priority, application Germany, Mar. 8, 1972, 2211063

Int. Cl. G06f *15/50*

U.S. Cl. 235—150.27 **14 Claims**



1. In apparatus to be mounted on a vehicle for producing signals indicative of the position of the vehicle relative to a known starting position, which apparatus includes: means for developing successive signals representing components of the motion of the vehicle in longitudinal and transverse directions during successive intervals; north-seeking gyrocompass means for producing a north direction indication signal; data input means for supplying signals indicative of such known starting position of the vehicle; and navigational computer means for producing signals indicative of the momentary position of the vehicle for each of the successive signals representing vehicle motion components, said computer constituting means for processing trigonometric functions and having first input means coupled to said means for developing successive signals representing vehicle motion components for receiving such signals and second input means coupled to said data input means for receiving signals indicative of the known starting position of the vehicle, the improvement wherein:

said navigational computer means comprises:

a. calculating circuit means connected to said first input means for receiving the successive signals representing vehicle motion components and for producing therefrom signals representing the resulting speed of the vehicle at such successive intervals;

b. speed angle circuit means connected to said first input means for receiving the successive signals representing vehicle motion components and for producing therefrom signals representing the speed angle of the vehicle at such successive intervals;

c. a logic circuit having first and second inputs, with said first input being connected to said calculating circuit means to receive the signals produced thereby and said second input being arranged to receive a signal indicative of the true directional angle of the vehicle movement, said logic circuit having first and second outputs and constituting means for deriving, from the signals at its inputs, a signal at its first output representative of the vehicle path component in the east/west direction and a signal at its second output representative of the vehicle path component in the north/south direction;

d. a summing circuit having first inputs connected to said second input means of said navigational computer means for receiving the signals supplied by said data input means, and second inputs connected to the first and second outputs of said logic circuit for receiving the signals produced thereby, said summing circuit having output means at which appear signals indicative of at least one component of the present position of the vehicle;

and said apparatus further comprises:

system error angle computer means having a first input coupled to said gyrocompass means for receiving the signal produced thereby, a second input connected to the output of said calculating circuit means to receive the signals produced thereby, a third input connected to the output of said speed angle circuit means to receive the signals produced thereby and a fourth input connected to said output means of said summing circuit to receive the signals appearing at such output, said system error angle computer constituting means for operating according to known gyrophysical motion equations in order to derive, from the signals supplied to its inputs, output signals representing the system error angle associated with said gyrocompass means;

addition circuit means having a first input connected to said gyrocompass means for receiving the signal produced thereby, a second input connected to said system error angle computer means for receiving the output signals produced thereby, and a third input connected to said speed angle circuit means for receiving the signals produced thereby, said addition circuit means combining the signals at its said inputs to produce at its output a signal indicative of the true directional angle of the vehicle movement, the output of said addition circuit means being connected to the second input of said logic circuit.

3,849,637

REACTOR MEGAWATT DEMAND SETTER

Robert M. Caruso, Simsbury, and Charles R. Musick, Vernon, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 22, 1973, Ser. No. 362,786

Int. Cl. G21d *3/00;* **G06f** *7/54*

U.S. Cl. 235—151 **10 Claims**

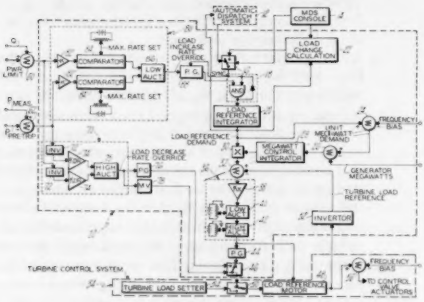
1. An improved method for controlling the load on an electrical power generation unit, the generation unit including

a nuclear steam supply system and a steam turbine driving a generator, the method including the steps of:

comparing the desired unit load with actual load to provide a unit load error indication;

controlling the turbine in accordance with the unit load error indication to null the load error by adjusting the turbine load;

monitoring a plurality of nuclear steam supply system operating conditions;



comparing the monitored steam supply system conditions with their permissible limits and providing signals commensurate with differences therebetween;

providing a load change rate override command whenever the margin between any of the monitored steam supply system operating conditions and its limit is within a preselected range; and

adjusting the load on the turbine at a rate commensurate with any override command.

3,849,638

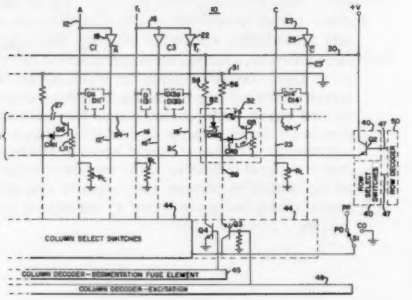
SEGMENTED ASSOCIATIVE LOGIC CIRCUITS

David L. Greer, Manlius, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed July 18, 1973, Ser. No. 380,388

Int. Cl. H03k *19/20*

U.S. Cl. 235—152 **10 Claims**



1. An associative logic circuit for implementing Boolean functions comprising:

an array of logic elements each having an input terminal and an output terminal, said logic elements being arranged in orthogonally disposed columns and rows each including a respective column or row conductor, at least one of said rows of logic elements being segmented into a plurality of logic element groups by division of its respective row conductor into a like plurality of electrically isolated collinear segments, with each group thus formed including at least one input logic element and at least one output logic element and further including at least one load element;

one or more of said column conductors associated with each said group of logic elements being connected to the output terminals of selected output logic elements of that group and connected across said load element associated therewith whereby the column conductor and the logic and load elements thus connected provide a Boolean function output which serves as input to a selected input logic element of another group and may also serve as an array output;

said row conductor segments associated with each said group of logic elements being connected to the output terminals of selected input logic elements of that group and connected across said load elements associated therewith whereby the row conductor segments and the logic and load elements thus connected provide a Boolean function output which serves as input to a selected output logic element of that group and may also serve as an array output; and

input means providing input variables in binary signal form into said array, and means for applying said input binary signals to selected ones of said column conductors and said row conductor segments, whereby the logic elements of said array as connected through said row and column conductors may generate complex multiple output Boolean functions of individual array input variables and lower level functions of these variables generated within the array.

3,849,639

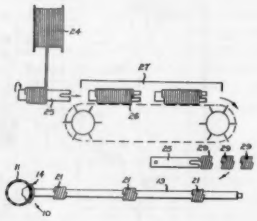
DRIP IRRIGATION METHOD

Alan James Brock, North Adelaide, and Douglas William Fulton, Angle Park, both of Australia, assignors to S.A. Rubber Mills Pty. Ltd., South Australia, Australia

Division of Ser. No. 298,230, Oct. 17, 1972, which is a continuation of Ser. No. 70,786, Sept. 9, 1970, abandoned. This application Nov. 28, 1973, Ser. No. 419,850

Int. Cl. B05b *17/00;* **B44d** *1/08*

U.S. Cl. 239—1 **4 Claims**



1. The method of installing a drip irrigation system over an area of land, comprising the steps:

a. joining a secondary distribution pipe to a main supply pipe for liquid flow communication with the main supply pipe,

b. piercing the wall of the secondary distribution pipe to form a series of apertures spaced along the pipe,

c. winding a series of capillary tubes onto formers, heating the capillary tubes while on the formers to a sufficient temperature and for sufficient time that they retain a coil shape after removal from the formers, the outer diameter of said capillary tubes exceeding the diameter of said pierced apertures,

d. removing the capillary tubes from the formers, and

e. cutting lengths from the capillary tubes and inserting the tube of each cut length through a respective pierced aperture.

3,849,640

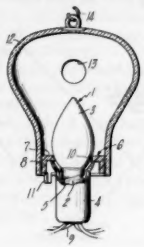
ELECTRIC LAMP COVER ADAPTER AND COVER

Jack N. McCarthy, Meadowood Rd., Tolland, Conn. 06084

Filed Oct. 1, 1973, Ser. No. 402,337

Int. Cl. F21v *17/00*

U.S. Cl. 240—100 **7 Claims**



1. A cover adapter for attaching a cover to an incandescent lamp, comprising a first member having a hole therein for receiving the base of a lamp, said first member having an outer edge, a cylindrical-like member, said cylindrical-like member having an inner surface and an outer surface, said outer edge of said first member being connected to the inner surface of said cylindrical-like member, the outer surface of said cylindrical-like member having external threads for receiving the internal threads of a lamp cover, projection means extending downwardly from said cylindrical-like member, said projection means having holding means for holding wires for delivering current to an incandescent lamp.

3,849,641

LAMP HOUSING ASSEMBLY

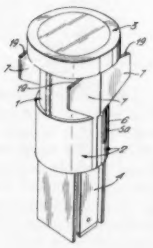
Roberto Plana, Barcelona, Spain, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 11, 1971, Ser. No. 170,800

Claims priority, application Spain, Sept. 24, 1970, 161829

Int. Cl. F21v *17/00, 21/00*

U.S. Cl. 240—151 **3 Claims**



1. An electrical lamp housing comprising a tubular body having a lens part at one end and being divided longitudinally of the body into two body parts, the body parts having latch means for securing them together in assembled relationship to form the body and being identical, the latch means comprising an elongated arm and slot on each body part for cooperating with a corresponding slot and arm respectively on the other body part, the lens part having at least one opening for receiving end portions of the body parts and being detachably securable thereto to assist the latch means in retaining the body parts in their assembled relationship.

3,849,642

MOTOR VEHICLE HEADLAMPS

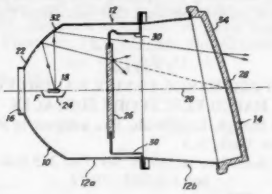
Olivier Puyplat, Paris, France, assignor to Cibie Projecteurs, Bobigny, France

Filed July 10, 1973, Ser. No. 377,999

Claims priority, application France, July 20, 1972, 72.26205; Mar. 27, 1973, 73.06856

Int. Cl. F21v *13/04*

U.S. Cl. 240—41.3 **10 Claims**



1. A motor vehicle headlamp comprising a parabolic mirror, a lamp having a dipped-beam filament disposed in front of the focus of the mirror, the mirror having a central part immediately surrounding the lamp and a peripheral part surrounding the central part, a front lens provided with relief patterns for intercepting and dispersing at least a part of the reflected dipped beam, and an auxiliary lens positioned between the lamp and the front lens, the auxiliary lens being provided with relief patterns for intercepting and dispersing at least that part of the dipped beam which is reflected by the central part of the mirror.

3,849,643

AUTOMATIC FOCUSING APPARATUS

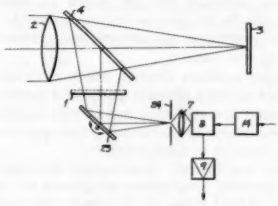
Hideomi Takeda, Tokyo, Japan, assignor to Asahi Kogahu Kagyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1973, Ser. No. 420,293

Claims priority, application Japan, Nov. 30, 1972, 47-120244

Int. Cl. G01j *1/20;* **G03b** *3/00*

U.S. Cl. 250—201 **5 Claims**



1. Automatic focusing apparatus comprising:

first means, including a lens, defining an optical path such that at least a portion of light passing through the lens impinges upon a plane, the lens and the plane being movable relative to each other in either of two opposite directions along the optical path,

second means, including a photoelectric element responsive to the light impinging upon the plane, for producing an electrical focusing control signal that varies in accordance with the degree of contrast in the light impinging upon the plane, the degree of contrast being maximum for an in-focus spacing between the lens and the plane,

third means, for increasing the difference between the degree of contrast obtained at an in-focus spacing and the degree of contrast obtained at an out-of-focus spacing,

the third means including an optical transmission function filter comprising a two-dimensional diffraction grating disposed in the optical path and spaced from both the lens and the plane, and the third means further including a scanning mechanism comprising oscillating means and a plate disposed between the grating and the plane and having a slit therethrough through which the light passes in accordance with the oscillating means; and

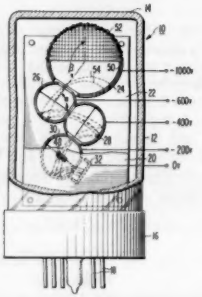
fourth means, responsive to the electrical focusing control signal for adjusting the spacing between the lens and the plane to a relative position that maximizes the degree of contrast.

3,849,644

ELECTRON DISCHARGE DEVICE HAVING ELLIPSOID-HAPED ELECTRODE SURFACES

James Louis Ibaugh, Landisville, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,666
Int. Cl. H01j *39/12*
U.S. Cl. 250—207 **14 Claims**



1. An electron discharge device comprising:

a. a staggered series of electrically disconnected electrodes, each of said electrodes including:

i. a cavity within its interior substantially surrounded and enclosed by an ellipsoid-shaped electrode wall surface with an electron emissive peripheral portion thereon,

ii. an input aperture through which an input energy source may be focused to impinge upon the electron emissive peripheral portion of said ellipsoid-shaped electrode wall surface,

iii. an output aperture through which electrons emitted from said electron emissive peripheral portion may be accelerated for egression out of said electrode, said input and output apertures being arranged in staggered angular relation to each other, and

b. means for restrictingly accelerating electrons emitted from immediately preceeding electrodes to succeeding electrodes of said series, in sequence, said means comprising an electron permeable electrostatic electron accelerating member internesting within the output aperture of an immediately preceeding electrode and positioned intimately adjacent thereto.

3,849,645

ATMOSPHERIC COMPENSATION RADIOMETER SYSTEM

Eugene C. Byrne, Hacienda Heights, Calif., assignor to Actron Industries, Inc., Monrovia, Calif.

Filed June 8, 1973, Ser. No. 368,259
Int. Cl. G01j *3/34, 3/50;* **G01n** *21/26*
U.S. Cl. 250—209 **9 Claims**

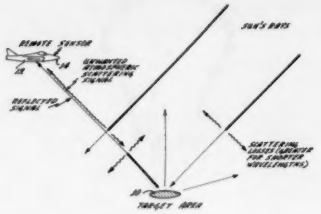
1. In combination:

a radiometer having a wide field of view for measuring spectral energy in a given band of frequencies;

first detecting means for measuring the spectral energy in at least two spaced-apart narrow bands, within said band of frequencies;

each of said narrow bands being affected differently by atmospheric scattering of radiation;

second detecting means for measuring the spectral energy in a broad band encompassing the given band of frequencies and including both of said narrow bands;



first processing means responsive to said first detecting means for determining the atmospheric scattering coefficient for spectral energy at the wavelengths received by a one of said narrow bands; and

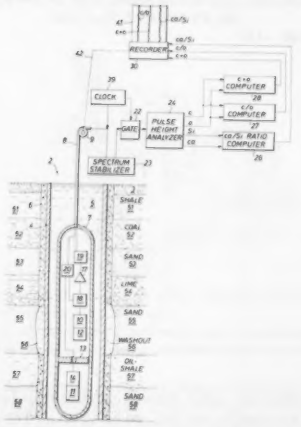
second processing means coupled to said first processing means for correcting the spectral energy measured in said broad band by said determined scattering coefficient, to calculate the extinction coefficient of the atmosphere for that spectral band.

3,849,646

INELASTIC NEUTRON SCATTERING METHODS TO LOCATE COAL AND OIL SHALE ZONES

Philip F. McKinlay; Harry D. Smith, Jr., and Ward E. Schultz, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 5, 1973, Ser. No. 367,299
Int. Cl. G01v *5/00*
U.S. Cl. 250—270 **8 Claims**



1. A method for locating and determining the quality of coal beds traversed by a well borehole comprising the steps of:

passing a well tool having a pulsed source of fast neutrons and a radiation detector through a well bore;

repetitively irradiating the earth formations in the vicinity of the well bore with relative short duration bursts of fast neutrons;

detecting, during said neutron bursts, gamma rays resulting from the inelastic scattering of fast neutrons by carbon, oxygen, silicon and calcium in earth formations in the vicinity of the well bore and generating signals representative thereof;

generating a first signal representative of the carbon/oxygen ratio of inelastic gamma rays in earth formations in the vicinity of the well bore;

generating a second signal representative of the calcium/silicon ratio of inelastic gamma rays in earth formation in the vicinity of the well bore;

generating a third signal representative of the carbon plus oxygen inelastic gamma rays of earth formations in the vicinity of the well bore;

determining the location of coal beds by comparing said first, second, and third signals; and

determining the quality of said coal beds by comparing said carbon/oxygen ratio signal with a predetermined relationship of said carbon/oxygen ratio signal as a function of a BTU content of coal.

3,849,647

SCANNING ELECTRON MICROSCOPE

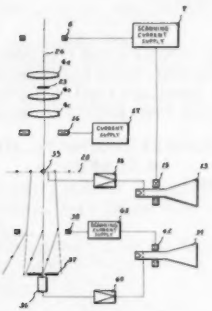
Hirotami Koike, and Katsuyoshi Ueno, both of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1973, Ser. No. 327,615

Claims priority, application Japan, Oct. 23, 1972, 47-105931

Int. Cl. H01j *37/26*

U.S. Cl. 250—306 **8 Claims**



1. A scanning transmission electron microscope and electron diffraction device having a lens and deflection system defining an electron optical axis and comprising means for generating an electron beam directed along the optical axis, means for condensing said electron beam, an objective lens comprising a magnetic flux creating coil and associated pole pieces for creating a magnetic lens in the gap between the pole pieces, means for positioning a transmission specimen along the optical axis in the specimen plane within the gap between the pole pieces of the objective lens, the intensity of the magnetic flux in said gap being sufficient to form a first apparent lens just before the specimen plane and a second apparent lens thereafter, said objective lens system causing the electron beam to cross the electron optical axis at least twice after passing through the specimen plane, means comprising at least one deflection stage for deflecting the electron beam through a point on the front focal plane of the first apparent lens such that the beam scans the specimen substantially perpendicular thereto, a detecting means for detecting the transmitted electron beam, said detecting means being placed on any plane perpendicular to the optical axis where the center of the electron beam crosses the optical axis at the second or more crossing points, a first display means to which the signal from said detecting means is supplied, said display means being synchronized with said deflecting means and a second display means for displaying the diffraction pattern formed on the plane where the center of the electron beam crosses the optical axis at the second or more crossing points.

3,849,648

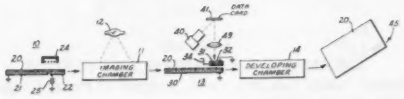
ELECTRON RADIOGRAPH PATIENT IDENTIFICATION SYSTEM

Frank V. Allan, and Murray S. Welkowsky, both of Los Angeles, Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed Dec. 10, 1973, Ser. No. 423,408

Int. Cl. G03b *41/16*

U.S. Cl. 250—315 **13 Claims**



1. A method of placing object identification on an x-ray picture formed on a dielectric receptor by electronradiography, including the steps of:

producing an electrostatic charge image on a dielectric receptor by exposing the object to x-ray radiation;

producing a substantially uniform electrostatic charge on a zone of the dielectric receptor;

contacting the receptor at the charged zone by a photoconductor with the receptor and photoconductor having contiguous nonconducting surfaces and spaced interconnected conducting surfaces;

directing radiation to the photoconductor in a pattern which identifies the object and making selected portions of the photoconductor conductive;

discharging the portions of the charged zone of the receptor in contact with said selected photoconductor portions; and

developing a visual image on the receptor corresponding to the charges thereon.

3,849,649

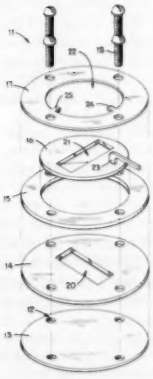
VARIABLE APERTURE X-RAY SHIELD

Carlton F. Carey, 221 Jackson, Anderson, Ind. 46011

Filed Mar. 26, 1973, Ser. No. 344,910

Int. Cl. G21f *5/04;* **H01j** *35/16*

U.S. Cl. 250—320 **17 Claims**



1. A device for providing a variable aperture for X-rays comprising:

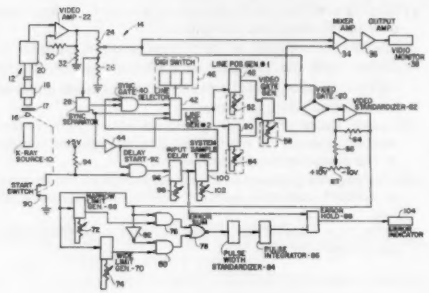
a. a first layer of material opaque to X-rays having a rectangular opening therein;
b. a second layer of material opaque to X-rays and having a rectangular opening therein; and
c. positioning means for maintaining said layers in parallel planes and for permitting said layers to rotate relative to one another, said positioning means including aligning means enabling positioning of the opening of said first layer of material such that a line perpendicular to said second layer and passing through said rectangular opening of said second layer also passes through said rectangular opening of said first layer.

3,849,650

AUTOMATIC X-RAY INSPECTION SYSTEM

Thomas Patten, San Jose, Calif., assignor to Picker Corporation, Cleveland, Ohio

Filed Mar. 29, 1973, Ser. No. 346,091
Int. Cl. H04b *1/38*
U.S. Cl. 250—321 **21 Claims**



1. In an X-ray inspection apparatus including a source of X-ray for irradiating an object under inspection; and video means positioned to view an image resulting from the irradiation of said object for developing video signals having values representative of the viewed image, and horizontal and vertical scan synchronizing pulses, the improvement comprising an automatic video processor circuit including;

adjustable line counter means for developing a first control signal upon the receipt of a preselected number of horizontal synchronizing pulses;

adjustable line position generator means for developing a second control signal upon the occurrence of a first control signal and at a predetermined period of time after the receipt of a vertical synchronizing pulse;

video gating means having an output circuit and being coupled to said video means for, upon receipt of a second control signal, applying video signals to its output circuit; standardizer circuit means coupled to said output circuit of said video gating means for converting video signals to digitized signals having values representative of the values of the video signals;

adjustable reference generator means for developing a signal representative of a preselected limit; and,

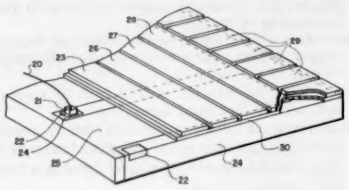
comparator circuit means for comparing said digitized signals with said limit reference signal and for developing an error signal if the value of said digitized signals attain a predetermined level with respect to the value of said limit reference signal.

3,849,651

CHARGE COUPLED SIGNAL PROCESSOR

Reinhard D. Ennulat, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 17, 1973, Ser. No. 397,528
Int. Cl. G01t *1/16*
U.S. Cl. 250—349 **10 Claims**



1. In a thermal imaging system wherein at least one line element of the thermal image is sampled simultaneously, an improved signal processing circuit comprising:

a linear array containing a plurality of detector elements responsive to far-infrared radiation;

a line imaging CCD with a like plurality of input diodes for signal injection; and

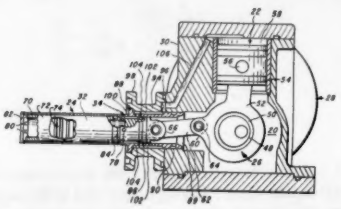
circuit means coupling said detectors and said diodes for matching the impedances thereof and limiting the signal coupled therebetween to match the charge storage capabilities of the CCD.

3,849,652

FLOATING ANNULUS FOR GAS PORTING TO A MOVING HEAT EXCHANGER

Robert M. Dix, Dallas, and Carol O. Taylor, Anna, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 25, 1973, Ser. No. 373,356
Int. Cl. G01t *1/16*
U.S. Cl. 250—352 **5 Claims**



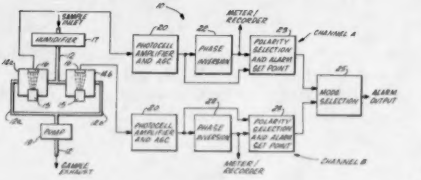
1. In an infrared receiver including an infrared detector in a scanning path for infrared energy emanating from a source thereof for producing electrical signals representative of impinging infrared energy, an electro-optical system coupled to the detector for processing video signals from the electrical signals produced by the detector, and a refrigerator for cooling the detector to an operating temperature, said refrigerator having a motor, a compressor having a piston, a cooling member having a cold chamber and a regenerator-displacer, and a passage interconnecting the cooling member for transporting a cryogen between the compressor and the cold chamber of the cooling member responsive to the operation of the motor reciprocating piston in the compressor and the regenerator-displacer in the cooling member, the cooling member, compressor and passage forming a working volume for the cryogen, the improvement comprising a passage means for connecting the regenerator-displacer throughout the reciprocating cycle thereof to reduce the dead volume in the working

volume and to circulate continuously the cryogen between the cold chamber and compressor through the regenerator-displacer to cool the cold chamber.

3,849,653
MULTICHANNEL BIOLUMINESCENT SENSORS

Roy R. Sakaide, Woodland Hills, and Clifford A. Shank, Canoga Park, both of Calif., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,287
Int. Cl. G01h *33/00*
U.S. Cl. 250—361 **8 Claims**



1. A system for detecting presence of a specific vapor in an atmosphere being sampled, comprising:

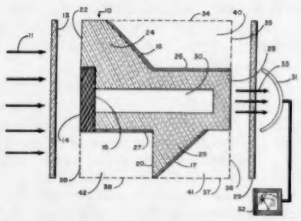
a plurality of bioluminescent sensors utilizing different strains of micro-organisms which have predetermined luminescence characteristics upon exposure to the vapor; transducer means for monitoring the sensors and generating a plurality of signals representing luminescence of each sensor;

circuit means connected to the transducer means to receive the transducer signals and to generate an output signal when the transducer signals represent the predetermined luminescence characteristics produced by exposure of the micro-organisms to the specific vapor.

3,849,654
FLUORESCENCE CUVETTE

Harry Herbert Malvin, 3315 Dakota Way, Las Vegas, Nev. 89109

Filed Oct. 19, 1973, Ser. No. 407,823
Int. Cl. G01j *3/00*
U.S. Cl. 250—363 **6 Claims**

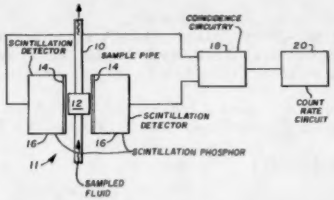


1. A cuvette comprising a cavity for receiving a fluid sample to be activated by incoming incident radiation, said cavity defined by confronting rearward and forward end walls spaced from each other in the direction of the incoming incident radiation and side walls therebetween, the rearward end wall being entirely opaque to incoming incident radiation and the forward wall being transparent to radiation scattered or emitted by said fluid sample, reflective surface means located external to and in fixed relationship to said cavity for reflecting said radiation at a 90° angle relative to the direction of the incoming radiation incident on the relecting surface, and means in said cavity for inserting and withdrawing a fluid sample.

3,849,655
LIGHT WATER REACTOR PRIMARY COOLANT LEAKAGE MONITOR

John Anthony Martucci, Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 15, 1972, Ser. No. 315,763
Int. Cl. G01t *1/10*
U.S. Cl. 250—366 **12 Claims**



1. A method for the detection of leakage from the reactor coolant pressure boundary of a water cooled reactor which is surrounded by a containment fluid wherein said reactor coolant is irradiated with high energy protons to activate oxygen nuclei to produce nitrogen-13 which is chemically bound in ammonia molecules, the method comprising:

a. sampling said fluid surrounding the exterior of said reactor coolant pressure boundary;

b. absorbing said nitrogen-13 and ammonia, on a molecular sieve;

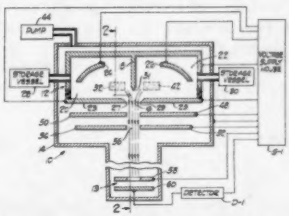
c. detecting gamma photons emanating from said nitrogen-13 by at least one pair of diametrically opposed mutually facing radiation detectors responsive to gamma photons; and

d. registering only those detected gamma photons which simultaneously activate one pair of said diametrically opposed detectors.

3,849,656
PLURAL SAMPLE ION SOURCE

Michael J. Wallington, Manchester, England, assignor to Associated Electrical Industries Limited, London, England

Filed Nov. 12, 1969, Ser. No. 876,078
Claims priority, application Great Britain, Dec. 17, 1968, 59940/68
Int. Cl. H01j *39/34*
U.S. Cl. 250—424 **14 Claims**



1. An ion source for a mass spectrometer comprising:

a. an evacuable ionization chamber;

b. inlet means for introducing a plurality of vaporized samples into separate regions of said chamber;

c. common aperture means defining at least one opening in communication with said ionization chamber through which ions formed in each of said regions exit to form an ion beam;

d. partition means within said chamber for restricting the movement of the vaporized samples between said regions;

e. means for developing ions of the samples in their respective regions of said chamber;

f. electrode means for accelerating the ions through said common aperture means thereby producing an ion beam containing ions from each of the samples; and,

g. said partition means extending to a position adjacent said common aperture means to define flow paths whereby ions from each of said regions may exit said ionization chamber through said opening without passing through any other regions.

3,849,657

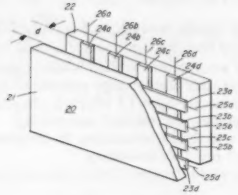
ELECTRO-OPTICAL DISPLAY DEVICE AND METHOD

David P. Hamblen, and George C. Higgins, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 192,414, Oct. 26, 1971, abandoned. This application Jan. 9, 1973, Ser. No. 322,270

Int. Cl. G01t *1/16*

U.S. Cl. 250—461 **20 Claims**



1. An electro-optical display device comprising:

a. a transparent cell having two spaced transparent conductive walls, said cell containing an organic luminescent medium which fluoresces upon exposure to ultraviolet radiation,

b. a source of ultraviolet radiation,

c. means for directing said radiation to said cell to excite said medium contained therein to cause fluorescence of said medium at one conducting wall of said cell, and

d. means for applying an electrical potential between said walls to quench fluorescence at said wall.

3,849,658

RADIOGRAPHIC RECORDING ELEMENT AND ITS USE IN RADIOGRAPHY

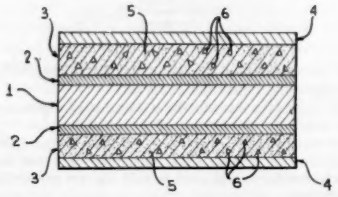
Lambert Gaston Jeurissen, Edegem; Romain Henri Bollen, Hove; Theofiel Hubert Ghys, Kontich, and Renaat Frans Heylen, Deurne, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 3, 1972, Ser. No. 303,407

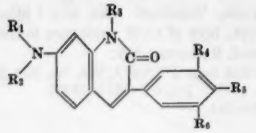
Claims priority, application Great Britain, May 31, 1972, 25528/72

Int. Cl. H01j *1/62*

U.S. Cl. 250—486 **20 Claims**



1. A radiographic image-recording element comprising a support bearing ultraviolet light-sensitive silver halide emulsion layers on opposite sides thereof and containing between said layers, or in said layers, a non-fluorescent ultraviolet light-absorbing substance corresponding to the formula:



wherein:

each of R_1, R_2 and R_3 independently of each other stands for an aliphatic group, each of R_4, R_5 and R_6 independently of each other stands for a member of the group consisting of hydrogen, alkyl, alkoxy and halogen.

3,849,659

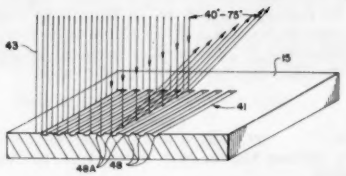
ALIGNMENT OF A PATTERNED ELECTRON BEAM WITH A MEMBER BY ELECTRON BACKSCATTER

Terence W. O'Keeffe, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 10, 1973, Ser. No. 395,804

Int. Cl. H01j *37/00*

U.S. Cl. 250—492 **13 Claims**



1. A method of aligning a patterned electron beam generated by a photocathode source with selected areas of a major surface of a member with a high degree of precision comprising the steps of:

A. forming adjacent a major surface of a member at least two widely spaced apart detector marks of predetermined shape capable of producing electron backscatter on irradiation by an electron beam;

B. positioning detector means corresponding to the detector marks adjacent periphery portions of the member;

C. detecting by the detector means backscattered electrons produced by the detector marks and producing electrical signals corresponding to the respective areas of the detector marks irradiated by electron beams;

D. positioning a photocathode source capable of projecting an electron beam spaced from the major surface of the member;

E. causing a patterned electron beam to be projected by the photocathode source onto the major surface of the member, said electron beam having alignment beam portions corresponding to the detector marks, and each said alignment beam portion having a predetermined cross-sectional shape;

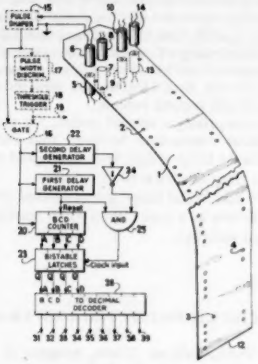
F. moving the patterned electron beam relative to the member while continuing step C so that electrical signals vary; and

G. positioning the patterned electron beam relative to the member where the electrical signals indicate optimum alignment of the alignment beam portions with the corresponding detector marks.

3,849,660
SYSTEM FOR PROCESSING FILM

Michel Hommerin, Paris, France, assignor to Compagnie Generale de Radiologie, Paris, France

Filed Apr. 13, 1973, Ser. No. 350,764
Claims priority, application France, Apr. 19, 1972, 72.13830
Int. Cl. G01n *21/30*
U.S. Cl. 250—570 9 Claims



1. A system for processing photographic or radiographic film comprising, in combination:

a. an unexposed film having sensible coded information encoded in predetermined zones of said film, said sensible coded information being present in predetermined numbers at predetermined locations for identifying in code at least one intrinsic characteristic of said film;

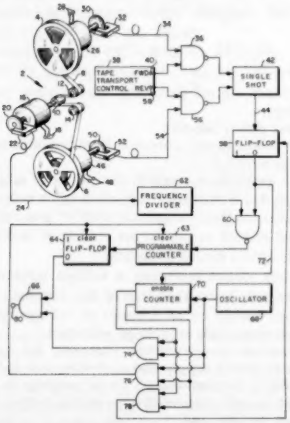
b. sensing means positioned adjacent to said zones of said film for sensing passage of said coded information; and

c. means for moving said film along a path past said sensing means.

3,849,661
TAPE TRANSPORT CONTROL SYSTEM

Glenn A. Beiter, Louviers, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 12, 1972, Ser. No. 262,020
Int. Cl. G01n *21/30*
U.S. Cl. 250—571 6 Claims



1. A tape transport control system comprising:

a tape drive capstan means for driving a tape at a predetermined speed;

first sensor means arranged to produce a frequency modulated output signal indicative of the rotational speed of said tape drive capstan means;

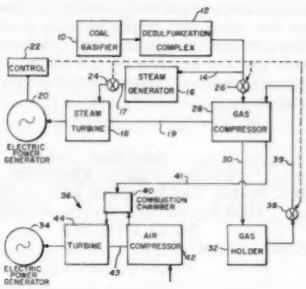
second sensor means arranged to produce a frequency modulated output signal indicative of the rotational speed of a tape storage reel operatively associated with said capstan means, which last-mentioned rotational speed varies in inverse proportion to the amount of tape stored on the tape storage reel; and

comparator means for comparing the two frequency modulated output signals to produce an output signal indicative of a predetermined relationship representative of the amount of tape stored on the tape storage reel.

3,849,662
COMBINED STEAM AND GAS TURBINE POWER PLANT HAVING GASIFIED COAL FUEL SUPPLY

Henry John Blaskowski, West Simsbury, and Robert Willis Koucky, West Hartford, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 2, 1973, Ser. No. 320,364
Int. Cl. F02c *1/04*
U.S. Cl. 290—2 8 Claims



1. An electric power generating plant comprising:

a. a coal gasification complex for production of a gaseous fuel;

b. a steam generator fired by said gaseous fuel;

c. a steam turbine receiving steam from said steam generator;

d. a first electric power generator connected to and driven by said steam turbine;

e. a storage tank for storing said gaseous fuel;

f. means for controlling the flow of gaseous fuel from said coal gasifier to said steam generator in response to increases and decreases in power demand on said first power generator;

g. means for flowing the gaseous fuel from said coal gasifier which is not directed to said steam generator to said storage tank;

h. a gas turbine fired by said gaseous fuel, said gas turbine comprising an air compressor, a combustion chamber and a turbine section;

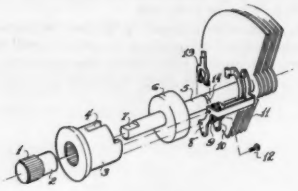
i. a second electric power generator connected to and driven by said gas turbine; and

j. means for flowing gaseous fuel from said storage tank to said gas turbine combustion chamber to be combusted therein when the power demand on said first power generator is greater than a predetermined level.

3,849,663
VEHICLE ANTI-THEFT DEVICE

Frank J. Bogusz, Earls Court, Farmington, Conn. 06032

Filed Sept. 20, 1973, Ser. No. 398,986
Int. Cl. H02g 3/00
U.S. Cl. 307—10 AT 6 Claims

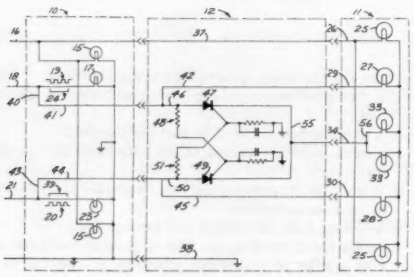


1. A vehicle anti-theft device comprising a pair of starter contacts adapted to be selectively closed,
means for starting the vehicle,
a radio including tuning means selectively locatable at any of at least a plurality of settings,
said tuning means including a first enabling contact which has a position which varies with the setting of said tuning means,
a second enabling contact,
means for actuating said starting means when said starter contacts and said enabling contacts are closed,
means for selectively displacing said second enabling contact from a first position to a predetermined position where said first enabling contact will be engaged when said tuning means is tuned to a selected one of said plurality of setting.

3,849,664
VEHICLE WIRING ADAPTOR

Richard C. Bryant, 1960 Evergreen, LaVerne, Calif. 91750

Filed Nov. 8, 1973, Ser. No. 413,954
Int. Cl. H02g 3/00
U.S. Cl. 307—10 LS 10 Claims

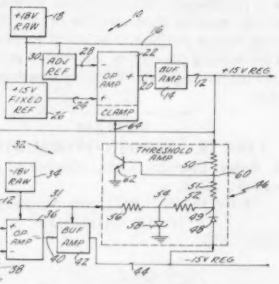


1. An adaptor for causing the American-type turn/brake circuit of a first road vehicle to selectively energize turn lamps and brake lamps of the turn/brake circuit of a second, foreign-type vehicle, said first vehicle having independent first and second composite turn/brake lamps, said second vehicle having independent first and second turn lamps and at least one independent brake lamp, said adaptor including connecting means and comprising:
means for providing a first electrical connection between said first composite turn/brake lamp of said first vehicle and said first independent turn lamp of said second vehicle;
whereby said first turn lamp of said second vehicle is adapted to function as either a turn lamp or a brake lamp, depending upon the electrical signal present at said first composite turn/brake lamp of said first vehicle;
means for providing a second electrical connection between said second composite turn/brake lamp of said first vehicle and said second independent turn lamp of said second vehicle;
whereby said second turn lamp of said second vehicle is adapted to function as either a turn lamp or a brake lamp, depending upon the electrical signal present at said second composite turn/brake lamp of said first vehicle;
means, comprising a first switch, for providing a first electrical connection between said first composite turn/brake lamp of said first vehicle and said independent brake lamp of said second vehicle;
means, comprising a second switch, for providing a fourth electrical connection between said second composite turn/brake lamp of said first vehicle and said independent brake lamp of said second vehicle;
whereby said brake lamp of said second vehicle is adapted to function as a brake lamp when permitted by the state of said switches.

3,849,665
SHORT CIRCUIT PROTECTED MASTER-SLAVE POWER SUPPLY

John C. Wells, Tolland, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 1, 1973, Ser. No. 402,423
Int. Cl. G05f 1/56
U.S. Cl. 307—24 3 Claims



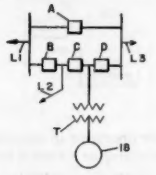
1. A short circuit protected master/slave power supply comprising:
a master power supply;
a slave power supply connected for response to said master power supply;
control means connected to the output of said slave power supply for detecting a reduction in its output voltage in excess of a given magnitude and for generating a control signal related to the output voltage of said slave supply, said control means including:
reference means providing a voltage reference having a magnitude lower than that of the nominal output of said power supply by an amount of voltage related to said given magnitude of voltage reduction;
a voltage divider connected between the output of said master power supply and said reference means;
a normally reverse-biased diode connected from a first point in said voltage divider to the output of said slave power supply; and
a transistor having its base connected to a second point in said voltage divider, the current through said transistor providing said control signal; and

means included within said master power supply and connected for response to said control means for clamping the output of said master power supply in a manner substantially proportional to said control signal.

3,849,666
METHOD FOR EMPLOYMENT OF FAST TURBINE VALVING

Robert H. Park, Brewster, Mass., assignor to Fast Load Control, Inc., Brewster, Mass.

Continuation-in-part of Ser. Nos. 525,615, Feb. 7, 1966, Pat. No. 3,515,893, and Ser. No. 42,281, June 1, 1970, Pat. No. 3,657,552. This application Apr. 17, 1972, Ser. No. 244,594
Int. Cl. H02j 1/10
U.S. Cl. 307—85 2 Claims

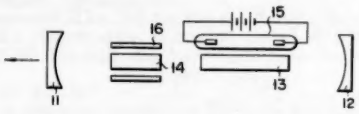


1. The method of avoiding development of instability within a power system as a consequence of a transmission line fault which comprises the steps of,
a. automatically initiating fast steam turbine valving in response to the occurrence of faults that would cause the opening of two lines if delay in fault clearance caused operation of a delayed fault clearance relay,
b. simultaneously automatically initiating turbine governor load signal modification of a nature adapted to reduce sustained post fault turbine driving power.
c. cancelling the load signal modification effected in step (b) if normal fault clearance takes place within a predetermined period of time following fault occurrence.

3,849,667
INTRACAVITY SECOND HARMONIC GENERATOR

Yutaka Uematsu, Tokyo, and Tsuguo Fukuda, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Saiwai-ku, Kawasaki-shi, Japan

Filed Aug. 13, 1973, Ser. No. 387,820
Claims priority, application Japan, Aug. 16, 1972, 47-82027
Int. Cl. H02m 5/06
U.S. Cl. 307—88.3 6 Claims

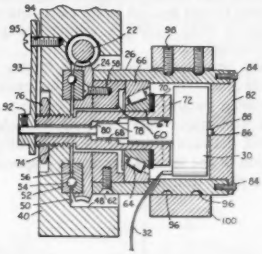


1. An intracavity second harmonic generator which comprises an optical resonator; crystalline potassium niobate received in the optical resonator so as to act as a second harmonic generating element, a laser element received in the optical resonator and emitting rays having an oscillated wave length of 0.9 to 1.1 microns; and a heater for heating the second harmonic generating element to the temperature at which phase matching between the fundamental and harmonic waves can be effected.

3,849,668
ORTHOTIC ARM JOINT

Dan H. Dane, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 4, 1973, Ser. No. 403,694
Int. Cl. B25j 3/00
U.S. Cl. 307—149 6 Claims

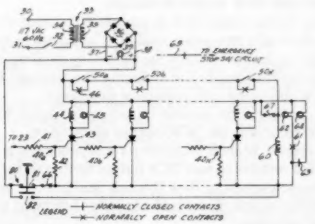


1. A joint for use in a mechanical arm comprising:
a. a fixed housing;
b. a thrust bearing including an inner race connected to said fixed housing and an outer race;
c. a worm gear;
d. said outer race being carried in said worm gear;
e. a spacer connected to said worm gear on an opposite side from said thrust bearing;
f. a radial thrust bearing having an inner race and outer race;
g. a bolt having a shank portion extending through said inner race of said radial thrust bearing, said spacer, said worm gear and said thrust bearing for engaging said fixed housing;
h. a rotatable housing supported on said outer race of said radial thrust bearing having an inner end fixed to said worm gear;
i. an outwardly extending arm coupled to said rotatable housing; and
j. an electric motor having a shaft coupled to said worm gear for rotating said worm gear responsive to being energized,
k. whereby said arm is manipulated by selectively energizing said electric motor for driving said worm gear which in turn rotates said rotatable housing.

3,849,669
MACHINE CONTROL

Billy J. Weston, 2317 W. Belmont Ave., Chicago, Ill. 60618

Filed Apr. 4, 1973, Ser. No. 347,887
Int. Cl. G05d 17/02; H01h 47/00
U.S. Cl. 307—154 7 Claims



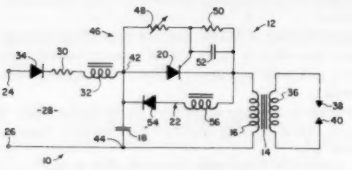
1. A machine control comprising:
a plurality of work piece sensing probes for use at a plurality of transfer points between work stations of a machine;

a control circuit normally conditioned to permit normal machine operation and operable to stop the machine;
a plurality of sensing circuits connected to respective ones of said probes and jointly operable in response to detection of transfer of a work piece at each point to maintain said control circuit in its normal condition;
a plurality of simulator circuits connected to respective ones of said sensing circuits for simulating the operation of a probe and its associated sensing circuit when such probe and circuit are not being used; said control circuit including a relay having a winding connected to said sensing circuits; and
a cyclically operated switch means having first contacts connected to said sensing circuits for cyclically resetting said sensing circuits and second contacts connected to said control circuit relay winding for holding the relay operated between resetting of the sensing circuits and operation of the sensing circuits in response to detection of work piece transfer.

3,849,670
SCR COMMUTATION CIRCUIT FOR CURRENT PULSE GENERATORS

Ronald F. Lourigan, Kenosha, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.

Filed Apr. 13, 1973, Ser. No. 350,986
Int. Cl. H03k *3/00*
U.S. Cl. 307—108 **5 Claims**

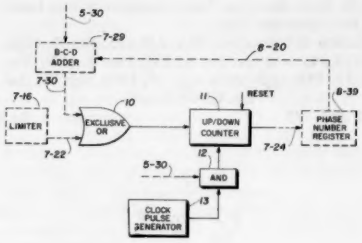


1. A current pulse generator circuit comprising:
a pair of power supply terminals adapted to be connected to a power source;
a capacitor;
circuit means including said power supply terminals and said capacitor for charging said capacitor;
a transformer having a primary winding;
an SCR having a pair of output electrodes and a control electrode;
a circuit loop including said capacitor, said primary winding and said SCR output terminals;
gating means connected to said SCR control electrode for periodically rendering said SCR conductive to discharge said capacitor through said primary winding; and
commutation means for reducing the turn-off time of the SCR following said capacitor discharge;
said commutation means including a circuit branch connected across the SCR output electrodes;
said circuit branch including rectifying means oppositely poled relative to said SCR output terminals for permitting reverse current to flow through said branch between said primary winding and said capacitor following discharge of the capacitor;
said circuit branch further including variable effective impedance means in series with said rectifying means for imposing an initially high reverse voltage on the SCR and for thereafter permitting substantial reverse current flow for recharge of the capacitor.

3,849,671
PHASE DETECTOR CIRCUITRY

Michael A. Molack, Nesconset, N.Y., assignor to Dynell Electronics Corp., Melville, N.Y.

Filed May 15, 1972, Ser. No. 253,377
Int. Cl. H03d *13/00*
U.S. Cl. 307—232 **7 Claims**

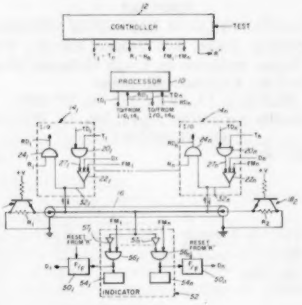


1. A phase detector operative in response to first and second binary signals occurring at a known frequency and recurring in discrete time intervals, comprising means for producing one discrete output when said first and second signals are of similar sense and another discrete output when said first and second signals are of a different sense, a source of pulses, counting means operative to continuously count said pulses and register indications in ascending order or descending order under control of said one or said other discrete output, respectively, and means for synchronizing said registration with one of said signals.

3,849,672
DIGITAL DATA TRANSMISSION SYSTEM

Christos J. Georgopoulos, Lowell, and Charles R. Ross, North Reading, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed June 30, 1972, Ser. No. 267,749
Int. Cl. H03k *5/08*
U.S. Cl. 307—235 **2 Claims**



1. In a digital data transmission system, the combination comprising:
a. a transmission line;
b. an input device;
c. an output device, the input device and the output device being interconnected through the transmission line;
d. an impedance matching network terminating such transmission line, such network comprising:
i. electrical means having an impedance, such impedance being matched to the impedance of the transmission line;

ii. a transistor, the collector electrode and the emitter electrode thereof being connected in shunt across the electrical means, such transistor being constructed to have a normal current gain at least ten times as large as the inverse gain of said transistor; and

iii. means for biasing such transistor in its inverse mode of operation.

3,849,673

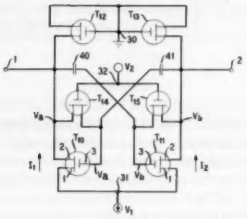
COMPENSATED IGFET FLIP-FLOP AMPLIFIERS

James Teh-Zen Koo, Wescosville, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 9, 1973, Ser. No. 414,193

Int. Cl. H03k *5/20, 3/286, 3/33*

U.S. Cl. 307—235 R **4 Claims**



1. A signal amplifier comprising:

a first pair of insulated gate field effect transistors having their source electrodes connected to a first common junction;

means, including the source-drain circuit of a second pair of insulated gate field effect transistors, for cross-coupling the gate electrode of each of said first pair of transistors to the drain electrode of the other of said first pair of transistors;

the gate electrodes of said second pair of transistors being connected to a second common junction;

means, including the source-drain circuit of a third pair of insulated gate field effect transistors, for coupling the gate electrodes of said first pair of transistors to a third common junction;

means for connecting the gate electrodes of said third pair of transistors to a fourth common junction;

and signal input terminals located in the gate-drain circuits of said first pair of transistors.

3,849,674

SIGNAL COMPARATOR CIRCUIT FOR ANALOG CONTROL SYSTEMS

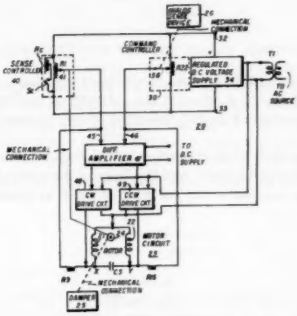
Robert G. Nettles, Goshen, Ind., assignor to Johnson Service Company, Milwaukee, Wis.

Continuation of Ser. No. 204,510, Dec. 3, 1971, abandoned, which is a division of Ser. No. 106,650, Jan. 15, 1971, Pat. No. 3,742,327. This application Mar. 16, 1973, Ser. No. 342,000

Int. Cl. H03k *17/00*

U.S. Cl. 307—253 **7 Claims**

1. A differential amplifier for comparing first and second input signals each of which is variable in amplitude and polarity and providing output signals which indicate amplitude and polarity differences between the compared signals, said amplifier comprising an input stage with a first input transistor having a first control electrode, and a first output electrode, and a second input transistor having a second control electrode, and a second output electrode, first means for extending to said first control electrode a first input signal which is variable in amplitude and polarity at said first control electrode, second means for extending to said second control electrode a second input signal which is variable in amplitude and polarity at said second control electrode, bias means biasing said first and second input transistors to be normally conducting for amplifying said first and second variable input signals to provide amplified signals at said first and second output electrodes, respectively, said bias means including a constant current source for supplying a constant current to said first and second input transistors such that said amplified signals provided by said input transistors establish a potential difference of one polarity between the first and second output electrodes whenever the input signal extended to the control electrode of one of said input transistors increases relative to the input signal extended to the control electrode of the other input transistor and a potential difference of the opposite polarity whenever the input signal extended to the control electrode of said one input transistor decreases relative to the input signal extended to the control electrode of the other input transistor, and an output stage including a first switching transistor having first and second input electrodes connected



to said first and second output electrodes, respectively, and a second switching transistor having first and second input electrodes connected to said second and first output electrodes, respectively, and means normally reverse biasing said first and second switching transistors, one of said switching transistors becoming forward biased to provide a first output signal whenever one of said input signals increases a predetermined amount relative to the other one of said input signals such that the amplitude of the amplified signal provided at said first output electrode is a given amount greater than the amplitude of the amplified signal provided at said second output electrode, and the other one of said switching transistors becoming forward biased to provide a second output signal whenever said one input signal decreases said predetermined amount relative to said other input signal such that the amplitude of the amplified signal provided at said second output electrode is a given amount greater than the amplitude of the amplified signal provided at said first output electrode.

3,849,675

LOW POWER FLIP-FLOP CIRCUITS

Sigurd Gunther Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 321,364, Jan. 5, 1973, abandoned. This application Jan. 3, 1974, Ser. No. 430,383

Int. Cl. H03k *3/286;* **G11c** *11/34*

U.S. Cl. 307—292 **7 Claims**

1. In combination:

first and second junction transistors, each of said transistors having a collector, a base, at least one emitter and an emitter-base junction;

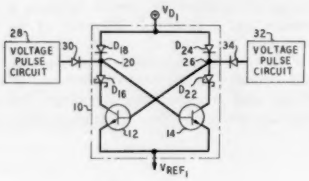
first and second diodes, each having essentially the same barrier height;

third and fourth diodes each having essentially the same barrier height;

the barrier height of the third and fourth diodes being less than the barrier height of the emitter-base junctions of the transistors;

one emitter of each of the first and second transistors being coupled together;

the cathode of the first diode being coupled to the anode of the third diode and the cathode of the third diode being coupled to the collector of the first transistor;



the cathode of the second diode being coupled to the anode of the fourth diode and the cathode of the fourth diode being coupled to the collector of the second transistor; and

the base of the first transistor being coupled to the cathode of the second diode and the base of the second transistor being coupled to the cathode of the first diode.

3,849,676

PHASE-CORRECTOR

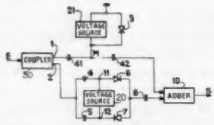
Claude Bareyt, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 16, 1973, Ser. No. 406,862

Claims priority, application France, Oct. 20, 1972, 72.37262

Int. Cl. H03b *3/04*

U.S. Cl. 307—295 **4 Claims**



1. A phase corrector comprising means, having an input and first and second output terminals, for applying an input signal in phase quadrature to said first and second terminals, the signal appearing at said first terminal lagging in phase relatively to the signal appearing at said second terminal; a linear attenuator coupled to said first terminal; a non-linear channel coupled to said second terminal and including a non-linear device comprising a d-c series arrangement of two diodes, said two diodes being connected in the same direction relatively to a d-c current applied to said series arrangement, and being coupled in parallel and in reverse directions relatively to the a-c current appearing at said second terminal, means for biasing said diodes by the same d-c voltage value and in the same direction, and an adder for adding together the output signals from said linear attenuator and from said non-linear channel.

3,849,677

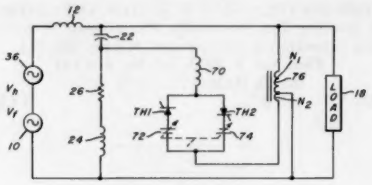
HYBRID POWER FILTERS EMPLOYING BOTH ACTIVE AND PASSIVE ELEMENTS

Eric J. Stacey, and Eugene C. Strycula, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 26, 1973, Ser. No. 373,726

Int. Cl. H03h *7/10*

U.S. Cl. 307—295 **4 Claims**



1. In an electrical system for supplying power from an electrical source section to a load section, one of said sections generating a single harmonic frequency fh to which the other section is subject to in the absence of filtering, the combination:

a hybrid filter interposed between said sections, and including at least two passive filter elements initially tuned to slightly above the said single harmonic frequency *fh;*

a shunt inductor having preselected inductance;

a pair of reverse parallel thyristors, the pair being connected in series with said shunt inductor, the series combination of shunt inductor and the thyristor pair being connected in parallel with one of said passive filter elements, whereby by adjusting the phase angle of thyristor conduction, the effective inductance of said shunt inductor is adjusted to bring said hybrid filter exactly at resonance at *fh.*

3,849,678

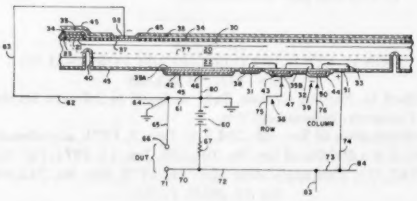
DETECTOR ARRAY

John Flynn, Belmont, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 12, 1973, Ser. No. 405,836

Int. Cl. H01l *15/00*

U.S. Cl. 307—311 **8 Claims**



1. In radiant energy responsive apparatus comprising a wafer of semiconductor material having a first thin layer of a first conductivity type on one side thereof for impingement by incident radiation and a second thicker layer of opposite conductivity type on the other side thereof to define therebetween a PN junction and an intrinsic junction depletion layer functioning inherently as a capacitor shunting a diode and a resistor of which the resistance decreases with increase in incident radiation, a plurality of intersecting grooves penetrating into said second layer to a depth insufficent to reach said depletion layer so as to divide said second layer into a plurality of detection elements, first conducting means for making electrical connection to all said elements, second conducting

means for making electrical connection to said first layer, and reverse biasing means connected to said first and second conducting means and of magnitude sufficient to broaden said depletion layer until said grooves do penetrate it, so as to mutually isolate said elements electrically, the improvement which comprises:

switching means integrated into each said element and forming part of said first conducting means, each said switching means having a first switching condition, in which the element is connected to said biasing means so that current flows to charge the inherent capacitor to a potential determined by said biasing means, and a second switching condition, in which the element is isolated from said biasing means so that the inherent capacitor may discharge, through the inherent resistance, at a rate determined by the incident radiation, and

means energizing the switching means of said elements into said first switching conditions singly in a predetermined repeating sequence of operations.

3,849,679

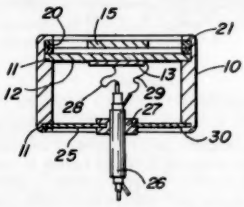
ELECTROACOUSTIC TRANSDUCER WITH CONTROLLED BEAM PATTERN

Frank Massa, Cohasset, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.

Continuation-in-part of Ser. No. 10,748, Feb. 12, 1970, Pat. No. 3,638,052, and a continuation-in-part of Ser. No. 17,430, March 9, 1970, abandoned. This application Apr. 1, 1970, Ser. No. 24,615

Int. Cl. H04r *17/00*

U.S. Cl. 310—8.2 **2 Claims**



1. An electroacoustic transducer comprising a tubular housing open on at least one end, vibratile diaphragm means having a center portion and an outer peripheral portion, means for sealing the periphery of said vibratile diaphragm to close the open end of said tubular housing and form a clamped vibratile disc, transducer means comprising a piezoelectric disc rigidly bonded to one side of said diaphragm, electrical conductor means attached to said piezoelectric disc for imparting electrical signals thereto, the center and peripheral portions vibrating in different modes which give rise to alternative sonic effects depending upon the degree of interaction between said modes of vibration, and sound baffle means for controlling the radiation of sound from the center portion of said diaphragm as compared with the radiation of sound from the outer peripheral portion of said diaphragm, said vibratile diaphragm operating at its overtone resonant frequency mode of operation, wherein said means for controlling the sound radiating from the center portion comprises a rigid sound masking disc positioned over the center portion of said vibratile diaphragm and spaced away from the radiation surface thereof, the diameter of said sound masking disc being less than one-half the diameter of the free and unsupported portion of said vibratile disc, and the spacing between said sound masking disc and said vibratile diaphragm being a linear distance approximately equal to a number derived by dividing the area of said masking disc by the periphery of said disc.

3,849,680

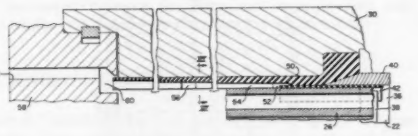
LIQUID COOLED ROTOR FOR DYNAMOELECTRIC MACHINES

Paul R. Heller, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 24, 1974, Ser. No. 436,284

Int. Cl. H02k *9/00*

U.S. Cl. 310—54 **10 Claims**



1. In a dynamoelectric machine having stator and rotor members, said rotor member having winding conductors disposed in longitudinal slots and means for circulating coolant liquid in thermal relation with said conductors, means on the rotor for receiving any leakage of said liquid and directing the leakage liquid to one end of the rotor, means for discharging liquid from said end of the rotor, and means on the stator member for receiving liquid discharged from the rotor.

3,849,681

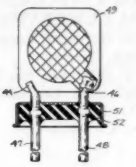
PIEZOELECTRIC CRYSTAL UNITS WITH MALLEABLE TERMINALS AND EPOXY-FILLER SEALANT

Kelley E. Scott, Jr., Plano; Daryl M. Kemper, Sandwich, both of Ill.; Lloyd E. Grove, Geneva, and Ronald J. Kiess, Decatur, both of Ind., assignors to CTS Corporation, Elkhart, Ind.

Division of Ser. No. 830,956, June 6, 1969, Pat. No. 3,656,217. This application Feb. 15, 1972, Ser. No. 226,430

Int. Cl. H01v *7/00*

U.S. Cl. 310—9.1 **15 Claims**



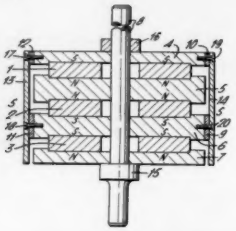
1. A piezoelectric crystal unit comprising an eyelet having a pair of terminal receiving apertures, a pair of conductive malleable terminals supported in the apertures of the eyelet, each of the terminals having a free end extending from the eyelet, a crystal plate having a pair of faces, an envelope surrounding the crystal plate and secured to the eyelet, and means formed integrally with the terminals for mounting the crystal plate in a substantially stress-free condition, said means comprising a bifurcated portion on each of said pair of terminals disposed adjacent to a face of said crystal plate, each of the bifurcated portions being provided with a slot defined by a pair of arms and a bottom edge, the crystal plate being disposed in and supported by the slot by the pair of arms and the bottom edge of the slot whereby stress-loading of the crystal plate by the mounting means is prevented.

3,849,682

PERMANENT MAGNET ROTOR FOR ALTERNATING CURRENT GENERATORS AND MOTORS

Kenneth John Binns, Chandlers Ford, England, assignor to National Research Development Corporation, London, England

Filed June 19, 1973, Ser. No. 371,541
Int. Cl. H02k *21/16*
U.S. Cl. 310—156 **19 Claims**



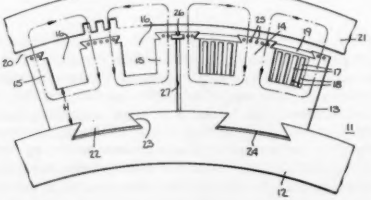
1. An alternating current electrical machine comprising a stator having an inner periphery with slots containing conductors of a distributed winding, and a rotor mounted to rotate with its outer periphery adjacent to the inner periphery of the stator, the rotor comprising a plurality of permanent magnets, spaced apart along the axis of rotation of the rotor with their magnetic axes coincident with the said axis and, with their directions of magnetization parallel to the said axis, a plurality of pole shoes spaced apart around the rotor periphery and extending substantially continuously for at least three quarters of the whole axial length of the rotor periphery, and a plurality of flux guides arranged to couple the poles of the permanent magnets to the pole shoes magnetically to give the pole shoes polarities which alternate around the rotor periphery but which are the same in the axial direction of the rotor over more than half the length of the outer periphery of the rotor, the flux guides and the pole shoes being arranged to ensure that the flux density at the pole shoes is high compared with that at the permanent magnet means.

3,849,683

POLE ELEMENT FOR A SYNCHRONOUS ELECTRIC MACHINE HAVING A LAMINATED LINK ROTOR

Werner Leistner, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 4, 1973, Ser. No. 357,260
Claims priority, application Germany, May 18, 1972, 2224911; Sept. 20, 1972, 2246448
Int. Cl. H02k *1/28*
U.S. Cl. 310—218 **6 Claims**



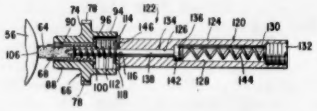
1. In an electric synchronous machine equipped with a laminated rotor and a pole arrangement mountable on the rotor, the pole arrangement comprising: a plurality of pole elements disposed one next to the other about the circumference of the rotor; and mounting means for mounting said pole elements on the rotor including for each of said pole elements an opening formed in the rotor, and a foot-like projection extending from the base of the pole element for engaging said rotor in said opening thereof; each of said pole elements including a pair of half poles disposed at the ends of the element, a complete pole disposed centered between said half poles, and an excitation winding for generating flux that passes into and out of the rotor, said complete pole being so configured and spaced apart from said half poles to conjointly define therewith respective pole gaps having a substantially rectangular shape for receiving said excitation winding therein in surrounding relation to said complete pole and for permitting the insertion and removal of said excitation winding in radial direction, said complete pole and said half poles conjointly defining a magnetic circuit for substantially confining all of said flux of said winding to the pole element in its passage through the rotor.

3,849,684

ASSEMBLY OF EXTERNALLY ACCESSIBLE BRUSHES

John L. Duncan, Pickens, and Fredrick W. Duthie, Greenville, both of S.C., assignors to The Singer Company, New York, N.Y.

Filed Feb. 21, 1973, Ser. No. 334,492
Int. Cl. H02k *13/00*
U.S. Cl. 310—242 **8 Claims**



1. Apparatus for retaining a brush in a holder mechanism connected in an electric motor having a commutator, the holder mechanism including a holder having a counterbored inner opening with a threaded upper portion, a tube carried in the holder, a brush radially slidable in the tube in superposition to the commutator, a coil spring connected to the brush and a cap threadedly connected to the holder to compress a spring and bias the same in the direction of the commutator, said apparatus comprising:

a. a retainer sized to slightly overlap the threaded opening in the upper portion of the holder prior to the cap being screwed in place,

b. the retainer is made of a thin, nonmetallic and semiflexible material,

c. The retainer has a central aperture formed therein,

d. a plunger means operatively associated with the retainer,

e. a barrel means formed on the plunger means, of smaller cross-sectional dimension than the cross-sectional dimension of the retainer,

f. a projection means extending from one end of the barrel,

g. the barrel means to exert a substantially uniform pressure upon the retainer being inserted into the brush holder,

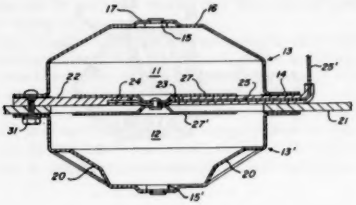
h. the projection means to extend through the central aperture of the retainer upon insertion thereof to be disposed within the coils of the spring to radially align the spring within the holder, and

i. the plunger means, including the barrel means and the projection means, is inserted into the brush holder to force the retainer radially downwardly, wherein the brush contacts the commutator and the spring is compressed between the brush and the retainer, the retainer will have its edges jammed into the threads of the holder to maintain its position after the plunger is removed prior to the cap being threaded into the holder.

3,849,685
IONIZATION CHAMBER WITH RECESSED RADIOACTIVE BODY

Larry D. Larsen, Palatine, Ill., and Arlon D. Kompelien, Richfield, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed June 22, 1973, Ser. No. 372,557
Int. Cl. H01j 7/40
U.S. Cl. 313—54 3 Claims

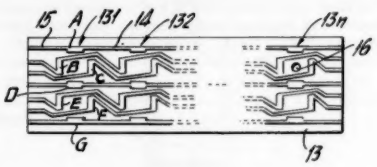


1. In an ionization smoke detector of the type having a smoke sensing chamber containing a radioactive source, an improved chamber assembly comprising in combination:
a cup like electrode mounted on a base member and defining an exterior chamber wall of an ionizing chamber;
a radioactive body for ionizing the area within said chamber, said body being mounted on the cup like electrode;
a dimple like recess in said cup like electrode at the mounting point of said body which is effective to recess the body so the radiating face thereof is substantially flush with the inner surface of the cup like electrode whereby the uniformity of ion flow to the inner surface of the electrode is improved.

3,849,686
PLASMA DISPLAY PANEL COMPRISING A FIRST EXTERNAL ELECTRODE FOR EACH DIGIT AND A SECOND EXTERNAL ELECTRODE FOR EACH SEGMENT

Togo Miyazaki, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed May 17, 1973, Ser. No. 361,327
Claims priority, application Japan, May 23, 1972, 47-60166; May 23, 1972, 47-60167; May 23, 1972, 47-60168
Int. Cl. H01j 7/42
U.S. Cl. 313—484 2 Claims

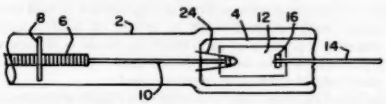


1. In a plasma display panel for a plurality of identical characters including:
first and second supporting members,
a plurality of identical sets of character-forming electrodes on said second supporting member,
a common electrode for each set on said first supporting member, and
means associated with the common electrode to enable a first electric potential to be applied thereto,
the improvement which comprises:
electroconductive means on said second supporting member in coplanar relation to said character-forming electrodes for connecting corresponding electrodes in each set in series so that corresponding electrodes in each set and the connecting electroconductive means therebetween form a continuous line segment free of branches, and
plural lead wires extending from first ends of each of the serially connected character-forming electrodes disposed at one end of said continuous line segment for applying a second electric potential to the corresponding electrodes connected to said each character-forming electrode coincident with said first potential, whereby a potential difference of predetermined magnitude may be produced between the energized corresponding electrodes and a common electrode for a selected set.

3,849,687
TUNGSTEN-HALOGEN LAMP WITH TANTOLUM GETTER

Leroy S. Huston, Derry, N.H., and Joseph S. Kulik, Jr., Amesbury, Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed July 13, 1973, Ser. No. 378,974
Int. Cl. H01k 1/54, 1/56
U.S. Cl. 313—179 5 Claims

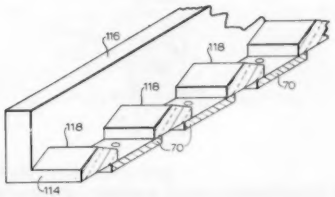


1. A tungsten-halogen incandescent lamp comprising:
an hermetically sealed, light-transmitting envelope;
a fill of inert gas and halogen within said envelope, said halogen being bromine;
a coiled tungsten filament supported within said envelope; and a piece of tantalum supported within said envelope for gettering oxygen and hydrogen, said piece of tantalum being so located within said envelope that the operating temperature of the portion of said tantalum piece used for gettering is between about 300° and 450°C.

3,849,688
DISPLAY PANEL HAVING ROWS AND COLUMNS OF CELLS WITH WIDE VIEWING ANGLE

Thomas C. Maloney, Bernardsville, and Donald E. Miller, Asbury, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed June 28, 1973, Ser. No. 374,398
Int. Cl. H01j 17/16
U.S. Cl. 313—188 11 Claims



1. A display panel comprising
a first insulating plate having a top surface and a bottom surface and having a plurality of first parallel grooves in said top surface,
a first anode electrode in each said first groove,
a plurality of second parallel cathode electrodes spaced from said first electrodes and oriented at an angle to said first electrodes so that each second electrode crosses a plurality of first electrodes,

each crossing of a first electrode and a second electrode spaced therefrom defining a gas volume which comprises a first gas cell,

a second plate having top and bottom surfaces and positioned above and in sandwich relation with said first plate,

a plurality of second parallel grooves formed in said top surface of said second plate and extending downwardly therein to close to said bottom surface thereof, each of said second grooves being generally vertically aligned with one of said first grooves in said first plate,

a plurality of cross ribs disposed in each of said second grooves,

said cross ribs being spaced apart along each of said second grooves with a portion of a cathode disposed in the space between each pair of cross ribs,

said cross ribs extending from near the bottom surface of said second plate toward the top surface thereof,

said cross ribs being of a thickness which is considerably less than the thickness of said second plate,

the space between adjacent pairs of said cross ribs defining apertures which are operated as second cells and each of which is aligned with a first cell,

third electrodes positioned on the top surface of said second plate, each aligned with a group of said apertures whereby a portion of each third electrode is aligned with a portion of a second electrode and a portion of a first electrode at each said aperture, and

a top glass viewing plate covering said third electrodes, said first plate, second plate, and viewing plate being sealed together with an ionizable gas included inside said panel and in said cells,

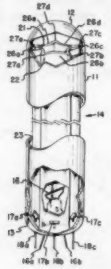
said thin cross ribs providing isolation between said adjacent cathodes while permitting a viewer looking through said viewing window along each of said slots to see all of said cathode electrodes aligned with said display cells even when said viewer views said panel over a relatively wide viewing angle.

3,849,689

SEQUENTIAL DISCHARGE FLUORESCENT LAMP

John H. Campbell, Mentor, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed July 2, 1973, Ser. No. 375,630
Int. Cl. H01j *17/00*
U.S. Cl. 313—190 **8 Claims**



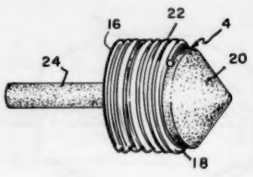
1. A vapor discharge lamp comprising a pair of envelope members in parallel spaced apart relationship and electrode means defining a plurality of parallel sequential vapor discharge paths between and parallel to said envelope members, the surface of at least one of said envelope members being shaped to provide a plurality of grooves respectively extending along and facing said vapor discharge paths, each adjacent pair of said grooves defining a rib spaced sufficiently from the other of said envelope members to permit the vapor discharge of said lamp to shift from one groove to the next through the space between said rib and said other envelope member.

3,849,690

FLASH TUBE HAVING IMPROVED CATHODE

Robert J. Cosco, Amesbury, and John A. Pappas, Winthrop, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Nov. 5, 1973, Ser. No. 412,811
Int. Cl. H01j *61/08*
U.S. Cl. 313—217 **8 Claims**



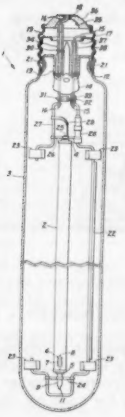
1. An electric discharge lamp comprising: an hermetically sealed, light transmitting envelope; a rare gas in said envelope; and a pair of electrodes in said envelope, one disposed at each end thereof, between which an arc discharge path is defined during operation of said lamp; at least one of said electrodes comprising a pressed and sintered pellet having a substantially cylindrical sidewall and composed of a substantially homogeneous mixture including a powdered refractory metal and an electron-emitting material, said cylindrical pellet being axially aligned with said arc discharge path, and a 100 percent pitched coil of refractory metal wire securely wound about the cylindrical sidewall of said pellet.

3,849,691

HIGH INTENSITY LAMP CONTAINING ARC EXTINGUISHING BASE

Byron R. Collins, Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,556
Int. Cl. H01j *5/46*
U.S. Cl. 313—318 **10 Claims**



1. A jacketed high intensity arc lamp comprising:

a vitreous outer envelope having a neck and a pair of inleads sealed therein at the neck end through a press;

an inner arc tube containing a discharge medium and having electrodes sealed into its ends and requiring a starting

voltage high enough to start a discharge between spaced conductors in air;

means supporting said arc tube within said outer envelope and including conductors connecting said electrodes to said inleads;

a base attached to the neck of said outer envelope and comprising a metal shell, and end insulator, and an end contact centrally mounted thereon;

one of said leads extending through said shell and being connected to said end contact and the other of said inleads being connected to said shell;

and a sleeve within said base, said sleeve being of refractory insulating material which retains its shape and does not become conductive at high temperatures up to 1,000°C, said one inlead being passed through said sleeve which serves to assure a minimum breakdown voltage therefrom to said shell and facilitates arc extinguishment by drawing the arc up into the sleeve as said one inlead shortens until the arc is lengthened and constricted into extinction.

3,849,692

SURFACE CONDUCTIVE TILTED CHANNEL PLATE ELECTRON MULTIPLIER

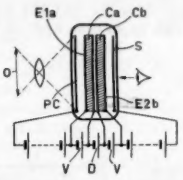
Robert Malcolm Beasley; Douglas Raymond Mainard, and Derek Washington, all of Salfords, near Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 31, 1972, Ser. No. 276,701

Claims priority, application Great Britain, Aug. 2, 1971, 36250/71

Int. Cl. H01j *1/32, 31/48, 43/22*

U.S. Cl. 313—379 **8 Claims**



1. A channel-type electron multiplier comprising a tandem pair of non-conductive plates each having end walls of high conductivity material arranged in substantially parallel planes and a plurality of elongate channels opening at said end walls, said channels having surface of low conductivity material for producing secondary emission when impinged by an electron beam, channels in one plate being at least partially in registration with assigned channels in the other plate and channels in both plates extending substantially in the same direction and being inclined substantially at the same angle with respect to the planes of corresponding end walls.

3,849,693

MULTIPLE POSITION DISPLAY PANEL HAVING SEGMENTED ELECTRODES

Saul Kuchinsky, Somerville; Arthur B. Shesser, Plainfield; Arpad Somlyody, Somerville, and Richard B. Fehnel, Basking Ridge, all of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 55,388, July 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 45,034, June 10, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 227,744

Int. Cl. H01j *61/66*

U.S. Cl. 313—519 **22 Claims**

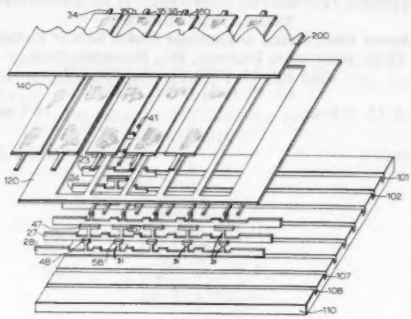
1. A multiple-position display device comprising

a sealed envelope having a viewing window and including an insulating base plate having top and bottom surfaces,

a plurality of elongated metal strip conductors spaced apart and supported by a surface of said base plate,

a plurality of metal strip cathode electrode segments spaced apart along the length of each of said elongated metal strip conductors, the cathodes of each strip being identical in size and shape,

said metal strip conductors and their cathode electrode segments being formed of a single piece of metal,



the cathode segments being positioned so that they form groups spaced apart along said device, each group comprising a display position,

an anode electrode positioned in operative relation with each of the groups of cathode segments, and

a gaseous atmosphere in the region about the cathode segments and the anode electrodes, including an ionizable gas at a pressure capable of sustaining cathode glow discharge.

3,849,694

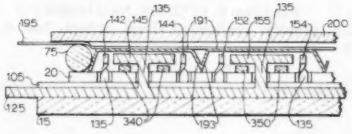
MULTIPLE POSITION DISPLAY PANEL HAVING SPURIOUS GLOW SUPPRESSOR

Edgar Lloyd Harvey, Old Bridge, N.J., and Joel Martin Levine, Dunwoody, Ga., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 217,781, Jan. 14, 1972, abandoned, which is a continuation of Ser. No. 78,045, Oct. 5, 1970, abandoned. This application Jan. 18, 1974, Ser. No. 434,614

Int. Cl. H01j *61/66*

U.S. Cl. 313—519 **23 Claims**



1. A display panel comprising

a sealed gas-filled envelope having a viewing window and including an insulating base plate having top and bottom surfaces,

a plurality of elongated conductors supported on said base plate and each carrying a plurality of cathode electrode segments spaced apart along its length and spaced from the surface of the base plate,

said segments being arrayed in groups on said conductors, with a segment of different conductors being included in each group and each group comprising a display position in said panel,

an anode electrode positioned beneath said cathode segments and adjacent the base plate in operative relation with each said group of cathode segments, and

an auxiliary electrode electrically isolating the segment groups with their associated anode electrodes from each other.

3,849,695

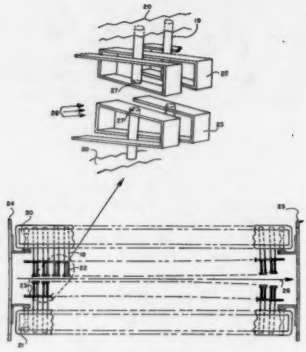
DISTRIBUTED DEFLECTION STRUCTURE EMPLOYING DIELECTRIC SUPPORT

Richard Elliot Piazza, and Bozidar Janko, both of Portland, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed July 19, 1973, Ser. No. 380,627

Int. Cl. H01j *23/34, 29/96*

U.S. Cl. 315—3 **10 Claims**



1. Dielectric supported deflection means comprising:

an array of non-conductive mutually parallel members having one end a solid body and the other end forming a comb structure having teeth extending therefrom; and

an array of conductive members defining helical deflection means bonded to the teeth of the non-conductive parallel members, said helical deflection means defining helix members having flat surfaces.

3,849,696

VERTICAL CONVERGENCE CIRCUITS

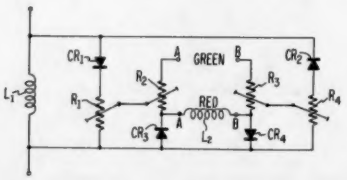
Rene Peter, Basel, and Hans Peter Lambrich, Geroldswil, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Jan. 6, 1972, Ser. No. 215,864

Claims priority, application Great Britain, Jan. 6, 1971, 569/71

Int. Cl. H01j *29/50*

U.S. Cl. 315—13 C **14 Claims**



1. In a color television receiver, including a vertical deflection circuit for providing vertical rate drive signals to an associated vertical deflection yoke, a convergence circuit comprising:

first and second input terminals adapted for connection to said deflection circuit,

magnetic field producing means including at least a first convergence winding, and

first and second current paths between said terminals, said current paths comprising, respectively, a series combination of a first unidirectionally conductive means with a first variable resistance means and a second unidirectionally conductive means with a second variable resistance means,

said first conductive means being poled and connected for conducting current through said winding while bypassing said second current path so as to isolate said first current path from variations of said second resistance means during a given half of each vertical scan interval and for blocking current flow through said first variable resistance means during a complementary half of each vertical scan interval,

said second conductive means being poled and connected for conducting current through said winding while bypassing said first current path so as to isolate said second current path from variations of said first variable resistance means during said complementary half of each vertical scan interval and for blocking current flow through said second variable resistance means during said given half of each vertical scan interval.

3,849,697

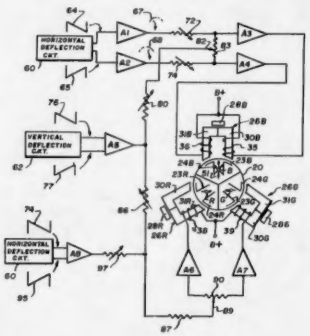
METHOD AND APPARATUS FOR STATIC AND DYNAMIC CONVERGENCE

Marvin E. Miller, Des Plaines, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 263,632, June 16, 1972, Pat. No. 3,774,132. This application Apr. 16, 1973, Ser. No. 351,655

Int. Cl. H01j *29/50*

U.S. Cl. 315—13 C **26 Claims**



1. In a color television receiver having a cathode ray tube with plural electron beams and scanning means for deflecting said plural electron beams to produce scanning lines, a convergence system, comprising:

static convergence means for statically converging said plural electron beams in the vicinity of at least one edge of said scanning lines;

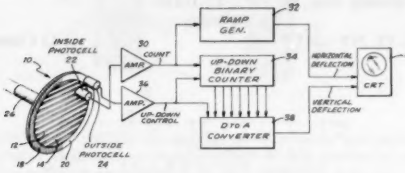
dynamic convergence means for dynamically converging said plural electron beams over a center portion of said scanning lines, including

adjustable means energized by said scanning means for producing a maximum controllable deflection for the scanning lines in the vicinity of the center portion.

3,849,698
ELECTROMECHANICAL SWEEP GENERATING SYSTEM WITH THE UTILIZATION OF PHOTOCELLS

Hugh F. Frohbach, Sunnyvale, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Apr. 25, 1973, Ser. No. 354,237
Int. Cl. H01j 29/70
U.S. Cl. 315—367 14 Claims



1. Apparatus for generating synchronizing signals in synchronism with a rotating device comprising:

disk means;

means for rotatably supporting said disk means to be driven in synchronism with said rotating device;

said disk means having parallel, equally spaced lines of one color alternate with parallel, equally spaced lines of a second color covering a face thereof and having a marking of one color extending over half of the perimeter of said face and a marking of another color extending over the other half of the perimeter of said face;

a first photodetector means adjacent to said disk means and spaced at a predetermined radial distance from the center thereof for generating first signals responsive to the lines of said disk means;

a second photodetector means adjacent said disk means positioned for generating second signals responsive to one of the colors on the perimeter of said disk means;

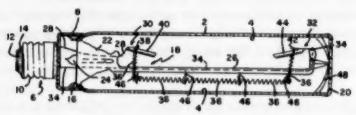
first means responsive to said first signals for generating ramp signals synchronous with each first signal; and

second means responsive to said first and second signals for generating an analog voltage which increases in the presence of second signals and decreases in the absence of second signals.

3,849,699
SINGLE BASE, SELF-IGNITING FLUORESCENT LAMP

William J. Roche, Merrimac, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Dec. 5, 1973, Ser. No. 421,980
Int. Cl. H01j 1/88
U.S. Cl. 315—46 9 Claims

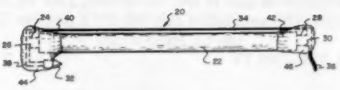


1. A fluorescent lamp comprising: an hermetically sealed, tubular glass envelope; a phosphor coating on the inside surface of said envelope; mercury and a rare gas contained in said envelope; a lamp base attached to one end of said envelope; and a mount structure sealed in said one end of said envelope and comprising, a first electrode supported at said one end of said envelope, a first lead-in wire electrically connecting said first electrode to a first terminal of said base, a rigid insulating tube within said envelope projecting from said one end of said envelope toward the other end thereof, a second electrode supported by said tube at said other end of the envelope, a second lead-in wire passing through the length of said insulating tube and electrically connecting said second electrode to a second terminal of said base, an ignition coil located within said envelope and electrically connected between said first and second electrodes, said ignition coil having an electron emissive coating over substantially its entire length, and support means projecting from said insulating tube and suspending said ignition coil away from the axis of the arc discharge path between said first and second electrodes.

3,849,700
NON-CORROSIVE AQUARIUM LAMP ASSEMBLY

Boyd R. Johnson, 2034 Ashton Cir., Salt Lake City, Utah 84109

Filed Oct. 18, 1972, Ser. No. 298,722
Int. Cl. H01j 7/44
U.S. Cl. 315—72 4 Claims



1. A non-corrosive lamp assembly comprising in a one-piece, non-corrosive waterproof lamp assembly:

a fluorescent lighting tube presenting electrical connection terminals;

conduction means permanently affixed to the terminals of the tube and operable to supply proper electrical current to the tube;

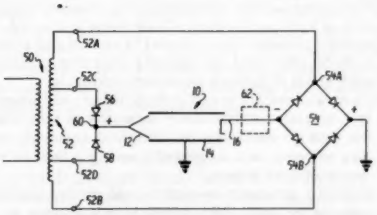
non-corrosive sealant means comprising a closed mass applied in fluid form and hardening, thereby adhering to the fluorescent lighting tube in a sealing relationship by encapsulating the ends of the tube and corresponding electrical connections, the sealant maintaining the tube and corresponding electrical connections in a waterproof condition; and

power supply means connected to the conduction means energizing the lamp.

3,849,701
INTEGRATED DUAL VOLTAGE POWER SUPPLY

Charles S. Kerfoot, Baltimore, and Frank A. Halgas, Laurel, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 16, 1973, Ser. No. 360,993
Int. Cl. H05b 39/00, 41/14
U.S. Cl. 315—101 7 Claims



1. A power supply circuit for supplying two supply voltages to a high power linear beam device comprising:

a transformer winding having an output terminal adjacent each end thereof and a plurality of taps equally spaced from said output terminals;

a full wave rectifying circuit operatively connected to said output terminals and adapted for electrical connection to the linear beam device for providing a first d.c. output voltage to the linear beam device; and,

a plurality of rectifiers each operatively connected in like polarity to an associated one of said plurality of taps and to a common terminal,

said common terminal being adapted for electrical connection to the linear beam device to provide, in association with said rectifying circuit, a second d.c. output voltage.

3,849,702

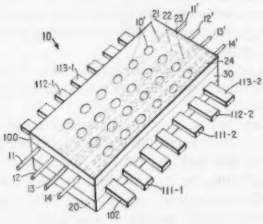
DISPLAY PANEL RESET AND SAFETY TIMING CIRCUIT

Mark F. Eisenberg, North Plainfield, and William J. Harmon, Jr., Middlesex, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 47,650, June 19, 1970, abandoned. This application July 10, 1972, Ser. No. 270,502

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **7 Claims**



1. A display system including a gas-filled display panel comprising

an array of first scanning cells disposed in rows and columns and including a scan anode electrode aligned with each row of scanning cells and a cathode electrode aligned with each column of scanning cells,

an array of display cells, each aligned with one of said scanning cells and adapted to receive glow transfer therefrom,

a display anode aligned with each row of said display cells and operating with said cathode electrodes,

a power supply coupled to said scan anodes for applying operating potential thereto,

said scanning cathode electrodes being connected in groups with at least every other cathode being in a group,

a separate cathode driver coupled to each of said groups of cathode electrodes for applying operating potential to each group of cathode electrodes separately,

drive means coupled to said cathode drivers and adapted to turn on each cathode driver separately in turn whereby the cathode electrodes are energized separately and in turn whereby each column of scanning cells is energized separately and in turn,

a character generator coupled to said display anodes and adapted to apply information signals thereto as each column of scanning cells is caused to glow whereby selected display cells in each associated column of display cells are caused to glow, and

means coupled to each of said cathode drivers for disabling said cathode drivers if said drive means becomes inoperative while one of said cathode drivers is applying operating potential to a group of cathodes.

3,849,703

ELECTRONIC FLASH APPARATUS

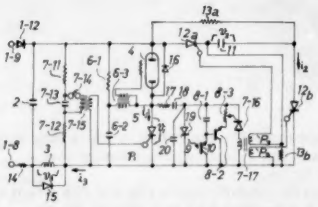
Akira Shimamura, Kawagoe, and Kunio Matsuzaki, Hanno, both of Japan, assignors to Shindengen Kogyo Kabushiki Kaisha (a/k/a Shindengen Electric Mfg. Co., Ltd., Tokyo-to, Japan

Filed June 7, 1972, Ser. No. 260,499

Claims priority, application Japan, July 6, 1971, 46-49284; June 9, 1971, 46-47987; July 20, 1971, 46-63478; Aug. 31, 1971, 46-78492; Aug. 31, 1971, 46-78493; Nov. 1, 1971, 46-101841; Mar. 18, 1972, 47-32431

Int. Cl. H05b *41/40*

U.S. Cl. 315—241 P **13 Claims**



1. An electronic flash apparatus using a flash tube, comprising: a flash tube having a triggering electrode; a direct current source, a main capacitor connected to the direct-current source and charged thereby; a coil; a first series circuit connected in parallel with said main capacitor through said coil and comprising the flash tube and a normally nonconducting main switching element; a control switch; a trigger circuit connected to the triggering electrode of the flash tube for triggering the flash tube in response to the conduction of the main switching element; a firing circuit connected to said control switch and responsive to the state thereof for rendering the main switching element conductive; a second series circuit connected in parallel with said first series circuit and comprising a first auxiliary switching element, a commutating capacitor and a second auxiliary switching element connected in the order named and wherein the first and second auxiliary switching elements have the same polarity as the main switching element; charging means electrically coupled through the commutating capacitor to said direct-current source for charging the commutating capacitor to a voltage having a polarity which is the reverse of that of the charged voltage of the main capacitor with respect to the forward current in the first and second auxiliary switching elements; light sensitive means for generating a detection signal responsive to reflected light which is reflected from a flashed object resulting from a light flash from the flash tube; an integrator receptive of said detection signal for integrating same and developing a corresponding output signal; and control means receptive of the output signal of said integrator and connected to the first and second auxiliary switching elements for triggering same when the output signal of the integrator exceeds a predetermined value.

3,849,704

LIGHTNING ARRESTOR

August L. Streater, Bluffton, Ind., assignor to Franklin Electric Co., Inc., Bluffton, Ind.

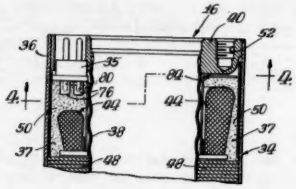
Filed Oct. 27, 1972, Ser. No. 301,629

Int. Cl. H02h *7/08, 1/04*

U.S. Cl. 317—13 R **9 Claims**

1. The combination of an electric motor including a grounded motor housing having an opening formed therein, power lines within said motor housing, at least one lightning arrestor mounted within said motor housing, said arrestor including a casing forming an electrode, said lightning arrestor

being connected to one of said power lines and said arrestor casing being press fit into said opening to both establish electrical connection and to support said arrestor, said motor



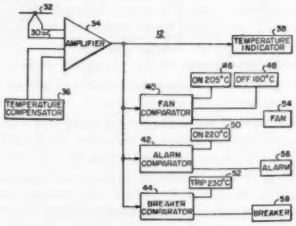
including a stator enclosure for a stator winding and potting material, said arrestor being located in said enclosure and being sealed to prevent entrance of said potting material.

3,849,705

FLUID-COOLED TRANSFORMER HAVING A TEMPERATURE RESPONSIVE INDICATING AND CONTROLLING DEVICE

David W. McElroy, Mercer, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 11, 1973, Ser. No. 378,285
Int. Cl. H02h *7/04*
U.S. Cl. 317—14 R **4 Claims**



1. A fluid-cooled transformer comprising the combination of:

a core and coil assembly;

temperature responsive means located within the transformer coil;

means for forcing the cooling fluid around said core and coil assembly, said forcing means being controlled by said temperature responsive means;

a first comparator circuit which is responsive to the temperature of said temperature responsive means, said first comparator circuit being constructed to activate the forcing means at a first predetermined temperature and to deactivate the forcing means at a second predetermined temperature of said temperature responsive means;

means for providing an alarm if the temperature in the coil becomes excessively high, said indicating means being activated by said temperature responsive means;

a second comparator circuit which is responsive to the temperature of said temperature responsive means, said second comparator circuit being constructed to activate the alarm means at a third predetermined temperature of said temperature responsive means;

means for interrupting the load power delivered by the transformer, said interrupting means being activated by said temperature responsive means; and,

a third comparator circuit which is responsive to the temperature of said temperature responsive means, said third comparator circuit being constructed to activate the reducing means at a fourth predetermined temperature of said temperature responsive means;

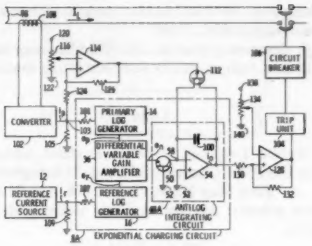
said temperature responsive means being isolated from the forcing, alarm, and interrupting means to prevent the transfer of any high voltages existing on the temperature responsive means to the forcing, alarm or interrupting means.

3,849,706

LOGARITHMIC COMPUTING CIRCUIT

Richard A. Johnson, Murrysville, and Jonn M. Fruhwald, North Braddock, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 4, 1973, Ser. No. 403,597
Int. Cl. H01h *47/18*
U.S. Cl. 317—27 R **9 Claims**



1. A logarithmic computing circuit for generating a computed output signal representing the value of a quantity raised to a variable power comprising:

means providing a primary current signal corresponding to the quantity to be raised to a variable power;

means providing a reference current signal;

a primary logarithmic function generator providing a primary log signal logarithmically related to said primary current signal;

a reference logarithmic function generator providing a reference log signal logarithmically related to said reference current signal;

means providing a differential signal responsive to the difference between said primary and reference log signals; gain control means having an adjustable gain factor related to the desired value of the variable power and providing a gain control signal responsive to said differential signal as modified by the value of said gain factor;

summing means adding said reference log signal to the gain control signal of said gain control means;

and an antilogarithmic function generator responsive to the output of said summing means to provide a computed output signal corresponding to the magnitude of the primary current signal raised to a variable power, said antilogrithmic function generator being automatically calibrated for the gain selected in said gain control by that portion of the output of said summing means which is responsive to said reference log signal.

3,849,707

PLANAR GAN ELECTROLUMINESCENT DEVICE

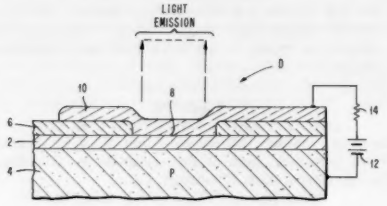
Norman Braslau, Katonah; John J. Cuomo, Bronx; Erik P. Harris, Yorktown Heights, and Harold J. Hovel, Putnam Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 7, 1973, Ser. No. 338,773
Int. Cl. K01l *15/00*
U.S. Cl. 357—17 **8 Claims**

1. An electroluminescent device comprising:

a substrate of *p*-type silicon;

a layer of high resistivity semi-insulating material on said substrate, said resistivity being of the order of 10^7 ohm-cm or higher,



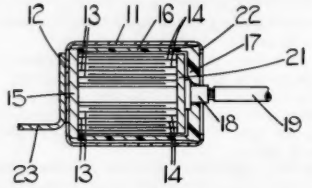
a transparent electrical contact on said high resistivity semi-insulating material; and

a high electrical potential connected between said substrate and said high resistivity semi-insulating material.

3,849,708
CAPACITORS

Peter Watson Leighton, Burnley, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed May 20, 1974, Ser. No. 471,717
Claims priority, application Great Britain, May 18, 1973, 23962/73
Int. Cl. H01g 1/14
U.S. Cl. 317—260 **2 Claims**



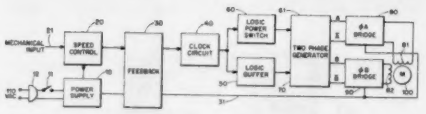
1. A roll capacitor comprising two conductive ribbons separated by a dielectric wherein the projecting edges of the two conductive ribbons each engage a face of a respective conductive element, the conductive elements each consisting of a flexible, electrically insulating elastomer containing particles of conductive material which define conductive paths through the element one of the elements being positioned between one end of said roll and the casing and so establishing the electrical connection between one of the capacitor plates and the casing, and the other element being positioned between the other end of the roll and said terminal and so establishing the electrical connection between the other capacitor plate and said terminal.

3,849,709
MOTOR CONTROL SYSTEM

Herbert Berman, Brookline, and Stan Tenen, Newton, both of Mass., assignors to Herbert Beeman, Weston, Mass.

Filed Apr. 25, 1973, Ser. No. 354,355
Int. Cl. H02p 5/40
U.S. Cl. 318—227 **9 Claims**

1. In a system for controlling a motor having at least one field winding and a variable frequency oscillator whose output controls motor speed, the improvement comprising speed control means coupled to said oscillator for controlling its output frequency, and including a light source a photo resistor and modulating means disposed intermediate said light source

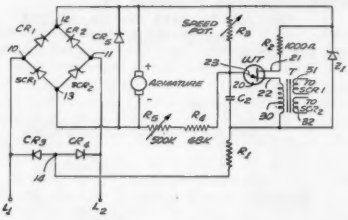


and resistor, said photo resistor characterized by a relatively long off or decay time constant as said photo resistor traverses from its low resistance to high resistance state.

3,849,710
MOTOR SPEED CONTROL CIRCUIT

Raymond J. Mason, Lynwood, Calif., assignor to Minarik Electric Co., Los Angeles, Calif.

Continuation of Ser. No. 290,244, Sept. 18, 1972, abandoned.
This application Dec. 26, 1973, Ser. No. 428,251
Int. Cl. H02p 5/16
U.S. Cl. 318—331 **8 Claims**



1. A motor speed control circuit comprising:

a bridge rectifier circuit having first and second input terminals and first and second output terminals, and including a pair of silicon-controlled rectifier devices coupled between respective ones of said input terminals and said second output terminal;

means for directly coupling a motor armature between said first and second output terminals;

said bridge rectifier also including first and second diodes coupled between respective ones of said input terminals and said first output terminal

third and fourth diodes coupled between respective ones of said input terminals and a third output terminal;

a first resistor having one end connected to said third output terminal;

a Zener diode connected between said first output terminal and the other end of said first resistor;

a unijunction transistor having its main current path coupled in series with the primary winding of a transformer, said series circuit being coupled across said Zener diode, said transformer having two secondary windings controlling respective ones of said silicon-controlled rectifier devices;

a speed potentiometer directly connected between said first output terminal and the control electrode of said unijunction transistor;

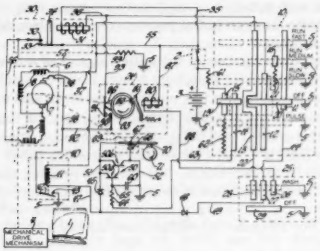
a capacitor coupled between said control electrode and said other end of said first resistor; and

additional bilateral resistance means connected directly between said second output terminal and said control electrode.

3,849,711
WINDSHIELD WIPER CONTROL CIRCUIT

James O. Elliott, Xenia, and Chris F. Keller, Jr., Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1973, Ser. No. 418,289
Int. Cl. B60s *1/08*
U.S. Cl. 318—443 4 Claims

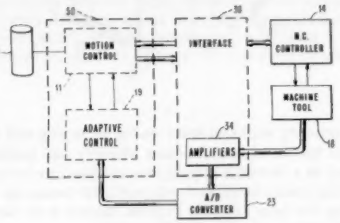


1. A windshield wiper control circuit comprising in combination with a windshield wiper and an electric drive motor having an armature and at least a shunt field winding for driving the windshield wiper over a normal wipe pattern between inner and outer wipe positions; an electrical relay having an operating coil and normally open contacts; an energizing circuit for said relay operating coil including first, second and third circuit branches all connected to the same terminal end thereof; an energizing circuit for said motor shunt field winding; an energizing circuit for said motor armature including said normally open contacts of said relay in series; an electrical selector switch having a plurality of stationary contacts and two gang-operated movable contacts operable to at least Off, Run, and Pulse positions, one of said movable contacts and one of said stationary contacts being connected in series in said first circuit branch of said relay operating coil energizing circuit and arranged to be in electrical circuit closed condition when said movable contacts are in said Off and Run positions and in the electrical circuit open condition when said movable contacts are in said Pulse position; a first electrical switching device having normally open current carrying elements electrically operable to the electrical circuit closed condition connected in series in said second circuit branch of said relay operating coil energizing circuit; a pulse control timing circuit activated while said movable contacts of said selector switch are operated to the Pulse position electrically coupled to said first electrical switching device for periodically operating said normally open current carrying elements thereof to the electrical circuit closed condition at spaced intervals whereby said second circuit branch of said relay operating coil is periodically completed at spaced intervals, said pulse control timing circuit determining the repetition rate of said spaced intervals; a second electrical switching device having normally closed current carrying elements which are operated to the electrical circuit open condition when said windshield wiper is in said inner wipe position connected in series in said third circuit branch of said relay operating coil energizing circuit for closing said third circuit branch when said windshield wiper is moved away from said inner wipe position and for interrupting said third circuit branch when said windshield wiper is in said inner wipe position; and a power switching device having current carrying elements which operate to the electrical circuit closed condition in response to the operation of said movable contacts of said selector switch to either said Run position or said Pulse position connected in series in said motor shunt field winding energizing circuit, said motor armature energizing circuit and said relay operating coil energizing circuit whereby said drive motor is continuously energized while said movable contacts of said selector switch are in said Run position and said motor is periodically energized at spaced intervals while said movable contacts of said selector switch are in said Pulse position.

3,849,712
ADAPTIVE NUMERICALLY CONTROLLED MACHINE TOOL RESPONSIVE TO DEFLECTION FORCES ON THE TOOL NORMAL TO THE CUTTING PATH

Larry G. Lankford, Mahopac, and William R. Whittle, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1972, Ser. No. 267,802
Int. Cl. G05b *13/00*
U.S. Cl. 318—561 3 Claims



1. A closed loop tool control system comprising

a tool having a workpiece supported with respect thereto, said tool extending towards said workpiece,

a plurality of motors for relatively moving said tool and said workpiece,

an automatic tool controller connected to said tool and said motors for providing control of the operation thereof,

a plurality of sensing means for producing signals proportional to the deflection force between said tool and said workpiece having an output,

program means for supplying program control to said controller and corresponding data to closed loop control means

closed loop control means for continuously calculating and recalculating changing values of the critical component of said deflection force transverse to the path of motion directed by said data from said program means,

said closed loop control means having an input connected to an output of said program means, said closed loop control means operating upon said critical component to provide an output control signal varying with said critical component,

motor rate means connected to said controller for controlling the rate of operation of said motors in response to control signals, said motor rate means having an input, and

means for connecting said output control signal from said closed loop control means to said input of said motor rate means.

3,849,713
POSITION DETECTING AND MAINTAINING DEVICE

Toru Wada, Matsubara, Japan, assignor to Tsubakimoto Chain Co., Ltd., Osaka-shi, Japan

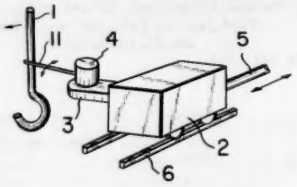
Filed June 18, 1973, Ser. No. 370,936
Claims priority, application Japan, June 20, 1972, 47-61695; Mar. 14, 1973, 48-28994
Int. Cl. G05b *11/01*
U.S. Cl. 318—675 8 Claims

1. A position detecting device for use with an article moving in a first direction along a first path, comprising:

guide means defining a second path which is spaced from but substantially parallel to said first path;

base means coacting with said guide means for movement along said second path in said first direction;

lever means rotatably supported on said base means, said lever means projecting outwardly so as to extend transversely relative to said paths, said lever means having a portion thereof positioned for engagement with said article when same is being moved along said first path to effect rotation of said lever means upon relative movement between said article and said base means;



means coacting with said lever means for urging said lever means to rotate in a direction whereby said portion is moved in a direction opposite to said first direction;

converting means associated with said lever means for converting the rotary angular position thereof to an electric signal; and

control means coacting with said base means and responsive to said electric signal for maintaining a substantially uniform spacing between said base means and said article as they are moved along their respective paths, whereby said base means and said article are moved substantially, in synchronism with one another.

3,849,714

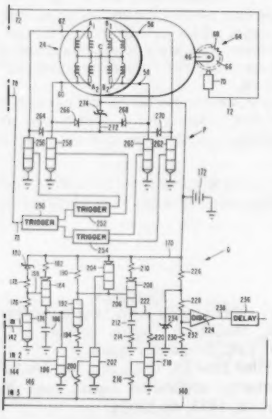
STEPPER MOTOR CONTROL SYSTEM

Jerome A. Goretzki; Kenneth E. Hendrickson, both of Rochester; Gary L. Mattson, and Larry F. Mattson, both of Pine Island, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 6, 1972, Ser. No. 260,238

Int. Cl. G05b *19/40*

U.S. Cl. 318—685 **13 Claims**



1. In combination, a stepper motor including a rotor and a stator, a plurality of windings on said stator, a source of electromotive force, an emitter rotatable with said rotor and producing output signals on incremental degrees of rotation of the rotor,

switching means connecting said source of electromotive force with said windings and responsive to successive pulse signals applied to it for switching said windings in such a manner to provide a step-wise rotating field in said stator tending to rotate said rotor likewise,

means connecting said emitter with said switching means so as to provide successive pulse signals to the switching means with rotation of said rotor to cause said rotor to accelerate from an initial position during an acceleration phase, and

means responsive to one of the output signals of said emitter for applying to said switching means a pair of quick pulse signals in addition to this output signal from said emitter, said pair of quick pulse signals being spaced time-wise from this emitter output signal and from each other much closer than are said first named successive pulse signals derived from said emitter for thereby rotating the magnetic field in said stator through **180** electrical degrees and thereby providing a retrotorque braking action on said rotor to cause it to decelerate during a deceleration phase.

3,849,715

ADJUSTABLE STEPPING DRIVE FOR MOTION-PICTURE FILM

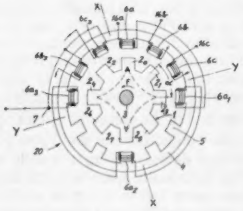
Pierre Regis Marie Henri Irissou, 2 rue Albert de Mun, Meudon-Bellevue, and Pierre Jean Francois Jacques Sarda, 26 rue du Parc de Clagny, Versailles, both of France

Filed Mar. 21, 1973, Ser. No. 343,403

Claims priority, application France, Mar. 23, 1972, 72.10192

Int. Cl. G05b *19/40*

U.S. Cl. 318—696 **19 Claims**



1. A stepping drive for intermittently advancing an elongate recording medium longitudinally subdivided into a succession of elemental areas of identical lengths, comprising:

an electric motor having a stator and a rotor coaxial therewith, said stator being provided with electromagnetic means forming an annular array of angularly equispaced magnet poles provided with windings and divided into $2n$ sectors of p poles each, n and p being integers with p at least equal to 3, said rotor having a ferromagnetic body provided with a set of angularly equispaced projections forming armatures for said poles, each set being divided into $2n$ sectors of q projections each, q being an integer greater than $p/2$ but less than p, the poles of each sector constituting a principal pole and a plurality of ancillary poles, said rotor having transitory positions in which certain of said armatures are aligned with ancillary poles and stopping positions in which certain of said armatures are aligned with principal poles;

energizing means for said motor connected to said windings for consecutive energization of successive pole pairs each consisting of correspondingly positioned magnet poles of

two adjoining sectors connected for concurrent antiphasal excitation, said energizing means including a generator of consecutive sequences of *mp* pulses each, *m* being an integer, the last pulse of each sequence energizing said principal poles and having a duration substantially greater than that of the preceding pulses whereby said rotor is invariably arrested in one of said stopping positions;

transport means engageable with said medium; and

mechanical coupling means linking said rotor with said transport means for advancing said medium by a single elemental area, for co-operation with associated equipment, upon rotation of said rotor from one stopping position to another stopping position.

3,849,716

VOLTAGE CONVERTER

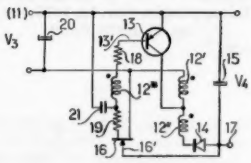
Guy De Bergh, Sceaux, and Jean Fontaine, Montrouge, both of France, assignors to Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique (Alcatel), Paris, France

Continuation of Ser. No. 104,948, Jan. 8, 1971, abandoned. This application Sept. 18, 1972, Ser. No. 289,917

Claims priority, application France, Jan. 9, 1970, 70.00704

Int. Cl. H02m *3/32*

U.S. Cl. 321—2 **1 Claim**



1. In a heart simulation device; a low voltage converter supplying very low power, comprising a unidirectional low voltage source of one volt or less, a three-winding transformer, an input circuit for connection to said unidirectional low voltage source and including a first winding of said three-winding transformer and a transistor, said first winding being connected in series with the collector-emitter junction of said transistor, an output circuit from which is obtained a unidirectional output voltage, including a second winding of the transformer, and a diode, said second winding being connected in series with said diode, and a feedback circuit comprising a single active element only in the form of a field effect transistor and the third winding of the transformer, the source-drain circuit of said field effect transistor being connected in series with said third winding, the gate of said field effect transistor being connected directly to the output circuit to directly provide a control input to the field effect transistor in accordance with the unidirectional output voltage.

3,849,717

CIRCUIT FOR OPERATION OF GAS DISCHARGE LAMPS

Alfred Walz, Am Kurzarm 7, Emmendingen/Baden, Germany, and Robert Ostreicher, deceased, In den Weihermatten 2, late of Teningen/Baden, Germany (by Ingrad Rombach geb. Ostreicher)

Continuation of Ser. No. 870,592, Aug. 13, 1970, abandoned. This application Dec. 18, 1972, Ser. No. 316,423

Int. Cl. H02m *7/00*

U.S. Cl. 321—15 **2 Claims**

1. An AC to DC converter for driving a gas discharge lamp type load from an AC source, comprising:

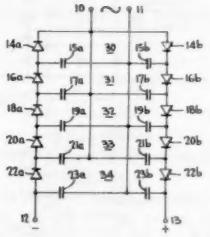
at least one first circuit connected to said AC source for generating a first voltage output which is a multiple of the peak voltage of said AC source,

at least one second circuit connected to said AC source and to the output of said at least one first circuit for generating a second voltage output which is a multiple of said first voltage output,

at least one third circuit connected to said AC source and to said second voltage output for generating a third voltage output which is a multiple of said second voltage output, said at least third circuit including output terminals for driving said load,

said at least one first circuit comprises first and second rectifying elements connected to one terminal of said AC source for respectively rectifying alternate half cycles of said AC source, and first and second capacitor elements respectively connected from the output of said first and second rectifying elements to the other terminal of said AC source,

said at least one second circuit comprises third and fourth rectifying elements respectively connected to the output of said first and second rectifying elements for respectively rectifying the same alternate half cycles of said AC source as said first and second rectifying elements, and



third and fourth capacitor elements respectively connected from the output of said third and fourth rectifying elements to said one AC source terminal,

said at least one third circuit comprises fifth and sixth rectifying elements respectively connected to the output of said third and fourth rectifying elements for respectively rectifying the same alternate half cycles of said AC source as said third and fourth rectifying elements, and fifth and sixth capacitor elements respectively connected from the output of said fifth and sixth rectifying elements to said other AC source terminal,

the capacitance of said first and second capacitor elements is equal, the capacitance of said third and fourth capacitor elements is equal, and the capacitance of said fifth and sixth capacitor elements is equal, and

the capacitance of said fifth and sixth capacitor elements is less than the capacitance of said third and fourth capacitor elements, and the capacitance of said third and fourth capacitor elements is less than the capacitance of said first and second capacitor elements.

3,849,718

METHOD FOR CONTROLLING A RECTIFIER CIRCUIT WITH CONTROLLED RECTIFIERS AND ASSOCIATED QUENCHING DEVICES

Johannes Forster; Karl-Heinz Bezold, and Helmut Niehage, all of Berlin, Germany, assignors to Licentia Patent-Verwaltungs GmbH, Frankfurt, Germany

Filed Dec. 26, 1972, Ser. No. 318,410

Claims priority, application Germany, Dec. 30, 1971, 2165959

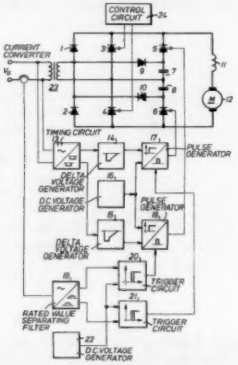
Int. Cl. H02k *29/02*

U.S. Cl. 321—40 **5 Claims**

1. In a method for controlling a rectifier circuit for an A.C. supply voltage and a corresponding A.C. supply current having a controlled rectifier and quenching means for the con-

trolled rectifier, the quenching means being connected in parallel with the controlled rectifier and having a quenching thyristor and a quenching capacitor, the method including firing the controlled rectifier at an adjustably selected firing electrical angle α and the improvement comprising the steps of:

establishing a quenching period between the electrical angle after which the A.C. supply current has reached its maximum value and prior to the electrical angle at which the A.C. supply voltage subsequently crosses through zero, said step of establishing a quenching period including the steps of producing a delta voltage signal in synchronism with a half-period of the A.C. supply voltage, producing a selectively variable first D.C. voltage signal, and comparing the delta voltage signal with the first D.C. voltage signal to determine the electrical angle of intersection of the delta voltage signal and the first D.C. voltage, said angle of intersection determining the beginning of the quenching period;



quenching the controlled rectifier at a quenching electrical angle β lying within said quenching period, and whose value is adjusted in dependence on a momentary value of the A.C. supply current, so that upon quenching of the controlled rectifier the resulting increase in voltage in the rectifier circuit is below the peak value of the A.C. supply voltage, said step of quenching at the adjustable angle β including the steps of producing a selectively variable second D.C. voltage, comparing a voltage signal representative of the half-period of the A.C. supply current with the second D.C. voltage signal, and controlling the quenching means for the controlled rectifier, by firing the quenching thyristor, to quench the controlled rectifier at the electrical angle following the beginning of the quenching period when the voltage signal representative of the A.C. supply current falls below the second D.C. voltage signal.

3,849,719

POWER RECTIFIER HAVING PHASE CONTROL ANGLE OF FIRING SIGNALS INDEPENDENT OF SUPPLY FREQUENCY VARIATION

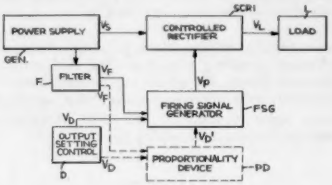
Allois F. Geiersbach, Milwaukee, and Thomas P. Gilmore, Wauwatosa, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 14, 1973, Ser. No. 425,177
Int. Cl. H02m *5/30*
U.S. Cl. 321—69 R **14 Claims**

1. In a phase control rectifier circuit wherein a sample of the power supply voltage is compared with a reference signal to derive firing pulses for a load-supplying controlled rectifier, the improvement comprising

a filter for shifting the sample voltage through a substantially constant phase angle of approximately n times 90°, where n is an integer,

means for deriving a D.C. signal proportional to the amplitude of the phase-shifted filter output voltage, and



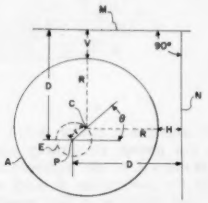
means for varying the magnitude of said reference signal in accordance with said D.C. signal, whereby the firing angles of rectifier firing pulses generated by comparing the output of said last-named means with the phase-shifted filter output signal are independent of variations in supply voltage frequency and magnitude.

3,849,720

ELECTRO-MECHANICAL SINE/COSINE GENERATOR

Bruce Flagge, 107 Dogwood Court Dr., Yorktown, Va. 23490

Continuation-in-part of Ser. No. 229,143, Feb. 24, 1972, abandoned. This application Mar. 13, 1973, Ser. No. 340,862
Int. Cl. H02k *39/00*
U.S. Cl. 322—96 **1 Claim**



1. A function generator comprising:

A cylinder having an axis of rotation parallel to and a distance from its central axis;

a noncontacting transducer means including a sensing element, with said sensing element located from the surface of said cylinder and fixed relative to said axis of rotation; for producing an electrical signal proportional to the distance between said sensing element and the surface of said cylinder;

means for adjusting the zero and peak amplitudes of said electrical signal produced by said noncontacting means; and

means for rotating said cylinder about said axis of rotation whereby the electrical signal produced by said noncontacting transducer means as said cylinder rotates is a sine function.

3,849,721

MICROWAVE LOGGING APPARATUS HAVING DUAL PROCESSING CHANNELS

Thomas J. Calvert, Norwalk, Conn., assignor to Schlumberger Technology, New York, N.Y.

Filed Aug. 23, 1973, Ser. No. 390,989
Int. Cl. G01v *3/12, 3/18*
U.S. Cl. 324—6 **7 Claims**

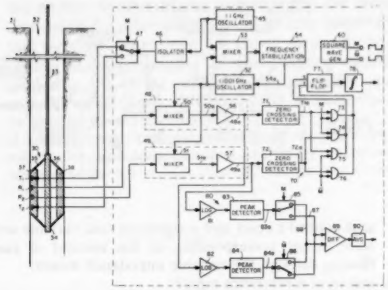
1. Apparatus for investigating earth formation surrounding a borehole, comprising:

first and second spaced transmitter means for injecting microwave electromagnetic energy into the surrounding formations;

switching means for alternately energizing said transmitter means;

first and second spaced receiver means positioned between said transmitter means on a substantially common axis therewith;

a first processing channel including in series arrangement first frequency translating means and first amplifying means for receiving microwave signals from said first receiving means, translating the frequency of said signals to a sub-microwave frequency and amplifying said signals to produce a first processed signal;



a second processing channel including in series arrangement second frequency translating means and second amplifying means for receiving microwave signals from said second receiving means, translating the frequency of said signals to a sub-microwave frequency and amplifying said signals to produce a second processed signal; and

means for comparing the phases of said first and second processed signals and for generating a first output which reflects said comparison; and

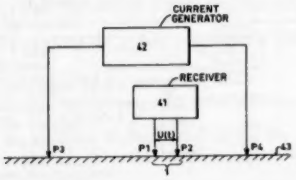
means synchronized with said switching means for reversing the sense of the comparison performed by said comparing means.

3,849,722

METHOD AND APPARATUS FOR DIGITALLY DETERMINING THE COMPLEX ELECTRIC FIELD WHEN CARRYING OUT PROSPECTING OPERATIONS

Bruno Yngve Nilsson, Boliden, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed July 2, 1973, Ser. No. 375,923
Claims priority, application Sweden, July 26, 1972, 9758/72
Int. Cl. G01v *3/06, 3/08*
U.S. Cl. 324—9 **7 Claims**



1. A method to be used in prospecting work for digitally determining the complex electric field generated in the ground when supplying an alternating current thereto, by determining potential differences in said field with respect to phase and amplitude, said method comprising the steps of:

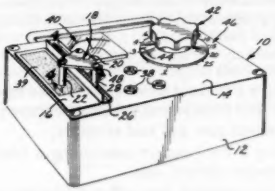
1. picking up a first voltage between at least two points in the ground, said first voltage representing the potential differences induced by said current between these at least two points,
2. converting said first voltage to a pulse train having a frequency which is proportional to the instantaneous values of said first voltage,
3. counting the pulses in said pulse train for a predetermined length of time,
4. producing at least one reference second voltage bearing a known relationship to said alternating current supplied to the ground,
5. producing signals in response to the value of said at least one reference voltage to determine whether a certain pulse of said pulse train shall be added or subtracted during the counting of the pulses of said pulse train,
6. reading the counted value of said pulses after the elapse of said predetermined length of time,
7. decoding the value obtained by said reading to a digital form, and
8. visually indicating the digits thus produced.

3,849,723

CONDUCTIVITY MEASURING METHOD AND APPARATUS

Gerald F. Allen, 532 Bucknell Ave., Claremont, Calif. 91711

Continuation of Ser. No. 61,738, Aug. 6, 1970. This application June 14, 1973, Ser. No. 370,157
Int. Cl. G01n *27/42*
U.S. Cl. 324—30 R **19 Claims**



1. A method of measuring the electrolytic conductivity of a liquid constituent of a sample comprising the steps of:

a. arranging a pair of conductivity measuring electrodes spaced from one another,

be removably arranging a body of dielectric sorption material with a first portion thereof bridging said electrodes and a second portion thereof exposed externally to said electrodes,

c. disposing said test sample in physical contact with said second portion of said body,

d. substantially saturating said first portion of said body by sorption transporting a portion of said liquid constituent of the sample from said second portion to said first portion of said body whereby the transported liquid constituent is in physical and electrical contact with said electrodes, and

e. measuring the conductivity of the transported liquid constituent bridging said electrodes.

3,849,724
METHOD AND APPARATUS FOR MEASURING THE GAP SPACING AND RELATIVE TRANSVERSE DISPLACEMENT OF AN ELECTROMAGNETIC CORE FROM AN ARMATURE USING MAGNETIC FIELD SENSORS

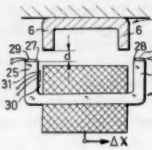
Michael Ghibu; Gerhard Bohn, both of Munich, and Peter Schwarzler, Furstenfeldbruck, all of Germany, assignors to Krauss-Maffei Aktiengeselischaft, Munich, Germany

Filed Nov. 13, 1972, Ser. No. 306,035

Claims priority, application Germany, Nov. 17, 1971, 2157011

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 D **10 Claims**



1. A method of measuring the gap spacing and the relative transverse displacement of an electromagnetic core from an armature spacedly juxtaposed therewith across a gap traversed by a main flux path closed through said armature upon electrical energization of a coil on said core by an energization current, whereby a stray flux approximately proportional to the amplitude of said current is generated at said core, said armature extending longitudinally and being of U-profile with shanks turned toward said core, said core being of U-configuration with spaced apart poles reaching toward said armature, each of said poles being provided with a respective main magnetic field sensor, said method comprising the steps of:

a. additively combining the outputs of said sensors to yield a first output constituting a function of the gap spacing and the intensity of said energization current and approximately proportional to the magnetic field intensity of said main flux path;

b. subtractively combining the outputs of said sensors to yield a second output;

c. forming a a quotient signal signal of said first and second outputs and proportional to a relative transverse displacement of said core and said armature;

d. deriving a third output constituting a function of said energization current; and

e. forming a quotient signal of said first and third outputs which is substantially proportional to the spacing of said gap and independent of the amplitude of said energization current.

3,849,725
CIRCUIT FOR SWITCHING DIFFERENT RESISTANCE VALUES CORRESPONDING TO AMOUNT OF LIGHT MEASURED

Chiharu Mori, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki K. sha, Tokyo, Japan

Division of Ser. No. 289,983, Sept. 18, 1972, Pat. No. 3,807,879, which is a continuation-in-part of Ser. No. 286,988, Sept. 7, 1972. This application Nov. 19, 1973, Ser. No. 417,426

Int. Cl. G01r *27/02*

U.S. Cl. 324—65 R **9 Claims**

1. A quantized indicating unit comprising:

a circuit path for current flow;

a controllable constant current source connected in said circuit path for current flow and having a control circuit, the current source being characterized in that bias signals at said control circuit varies the amount of current flowing therethrough;

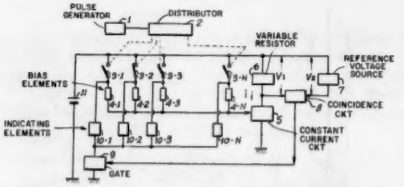
a controllable variable impedance means coupled as a load circuit in said circuit path for current flow;

a bias establishing circuit for said control circuit comprising:

a plurality of impedance means, and

means for selectively coupling any one of said impedance means to said control circuit thereby establishing the bias on said control circuit;

means for repeatedly and sequentially scanning through a sequence of states, said coupling means responding to each different one of said states for coupling at least one different impedance means to said control circuit thereby causing for each of said states a different bias signal on



said control circuit and a signal on said variable impedance means corresponding to the amount of current flowing through the variable impedance means;

a source of a reference signal;

means for comparing said signal with said reference signal;

an indicating element for each of said impedance means; and

means coupled to said scanning means and comparing means and operative in synchronism the scanning of said scanning means for responding to each correspondence detected by said comparing means for switching an indicating element into an indicating condition which indicating element corresponds to the impedance means that is coupled to said control circuit at the detected correspondence.

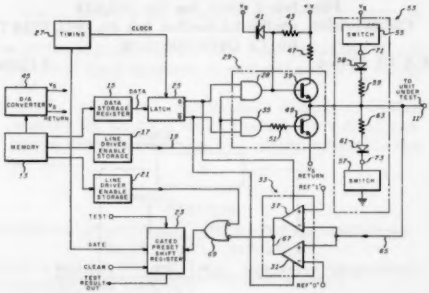
3,849,726
UNIVERSAL PROGRAMMABLE DIGITAL TESTING INTERFACE LINE

Frank K. Justice, Clearwater, Fla., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 28, 1974, Ser. No. 437,119

Int. Cl. G01r *31/00*

U.S. Cl. 324—73 R **7 Claims**



1. A universal programmable interface line for intercoupling in accordance with stimulus or response information from an external memory, comprising terminal means for

connecting the interface line to the external unit, line driver means for producing binary logic stimulus voltages at the terminal means, voltage comparator means for evaluating the magnitude of response signals applied to said terminal means by the external unit, programmable loading means for adjusting the impedance level at the terminal means, means for coupling said line driver means and said loading means to a programmable voltage source, means responsive to said stimulus or response information from said external memory for optionally enabling and disabling said line driver means and said voltage comparator means, and means for temporarily storing information derived from said voltage comparator means,

said line driver means including a pair of output transistors arranged to be serially coupled across said programmable voltage source, said transistors being connected so that the emitter element of one transistor and the collector element of the other transistor are directly connected to said terminal means, said line driver means further including means responsive to said enabling means for saturating one or the other of said transistors when a stimulus signal of logic ONE or ZERO, respectively, is to be applied to said external unit.

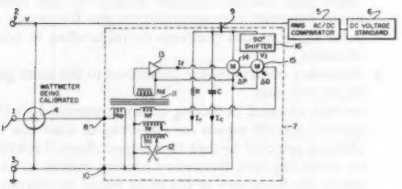
said loading means including resistor means and switching means for optionally coupling said terminal means to sources of known voltage through said resistor means.

3,849,727

CURRENT COMPARATOR FOR POWER AND ENERGY MEASUREMENTS

Norbert L. Kusters, and William J. M. Moore, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Aug. 10, 1973, Ser. No. 387,450
Int. Cl. G01r *21/00*
U.S. Cl. 324—142 **10 Claims**



1. An apparatus for measuring power which has a current component I and a voltage component V, comprising:

current transformer means having primary and secondary winding means;

means for applying the current I through the primary winding means;

means for measuring the voltage V;

impedance means connected in series with the secondary winding means;

means for applying the voltage V across the impedance means and the secondary winding means to provide a current therein; and

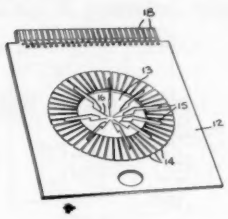
means adapted to provide ampere-turns balance within said current transformer means to enable power determination in terms of the voltage V, the impedance means and the primary and secondary turns ratio of said transformer.

3,849,728

FIXED POINT PROBE CARD AND AN ASSEMBLY AND REPAIR FIXTURE THEREFOR

Arthur Evans, Brookfield Center, Conn., assignor to Wentworth Laboratories, Inc., Brookfield, Conn.

Filed Aug. 21, 1973, Ser. No. 390,184
Int. Cl. G01r *31/02, 1/06*
U.S. Cl. 324—158 F **8 Claims**



1. A fixed point probe card for testing integrated circuit patterns formed on a substrate, each pattern having contacts deployed thereon at diverse points, said card comprising:

A. a planar printed circuit board having an opening providing access to an integrated circuit pattern, said board being subject to slight warpage,

B. an array of spaced conductive pads surrounding said opening, said pads being connected by said printed circuit to terminals, and

C. probes cantilevered from selected pads to provide connections between said integrated circuit contacts and said terminals, each probe being constituted by a rigid needle-holder formed of a thin strip of metal lying in the vertical plane and slightly raised above a respective pad, said holder being soldered to said pad to maintain the position thereof, and a resilient needle directly attached to the holder and extending therefrom, the needle extensions of all probes being of the same lengths, the raised holders being soldered to said pads at oriented positions relative thereto whereby regardless of board warpage, the points of all needles extending from the holder lie in a common plane and are disposed to engage said contacts, the needle holders being cantilevered from their respective pads to a degree necessary to bring the points into engagement with the contacts deployed at diverse points on the pattern.

3,849,729

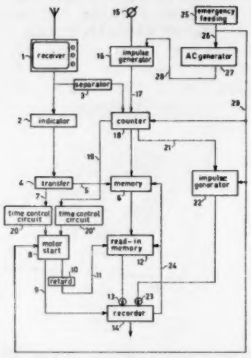
SYSTEM FOR DETERMINING THE LISTENING AND VIEWING HABITS OF WAVE SIGNAL RECEIVER USERS

Johannes Wilhelmus Van Baggem, Scherpenzeel, Netherlands, assignor to Intomart N.V., Hilversum, Netherlands

Filed Dec. 14, 1972, Ser. No. 309,885
Int. Cl. H04h *9/00*
U.S. Cl. 325—31 **10 Claims**

1. A system for determining the listening and viewing habits of radio and television receiver users comprising in combination, recording means with a movable record, means connected to said recording means and one said receiver for recording a coded signal on the record identifying the turning channel of the receiver and operation condition and the identification times when switching-in of the receiver and switching-off of the receiver and changing channels, means for developing further signals comprising time measuring intervals of predetermined duration, means connected to said recording means for recording on said record said measuring intervals during the operation of the receiver by a signal identifying the number of time units elapsed since the last coded signal was recorded, and signal responsive recording moving means connected to detect both said coded signals and said time

measuring intervals for moving the record for recording when either of said signals are present and for stopping the record when said signals are not being presented for recording,

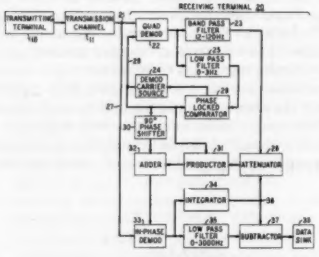


thereby presenting on the tape coded signals with the further time measuring signals therebetween indicating the time the tuning to a channel is kept in force.

3,849,730
CARRIER RECOVERY IN VESTIGIAL SIDEBAND DATA RECEIVERS

Edmond Yu-Shang Ho, Englishtown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 20, 1973, Ser. No. 371,680
Int. Cl. H04b *1/30*
U.S. Cl. 325—329 **4 Claims**



1. A synchronous demodulating carrier-wave recovery system for a vestigial-sideband, amplitude-modulated data signal which includes a discrete carrier component and which is received over a transmission channel subject to the impairments of frequency offset and phase jitter comprising

an adjustable local oscillator,

a quadrature demodulator responsive to said received signal and to the output of said local oscillator,

a control loop having a narrow bandwidth comparable to that of said frequency offset extending between said quadrature demodulator and said oscillator to control said oscillator,

a transmission path for the output of said quadrature demodulator having a passband comparable to that of said phase jitter for isolating a phase-jitter component therein, means for multiplying said phase-jitter component by the output of said local oscillator to form a partial in-phase demodulating signal,

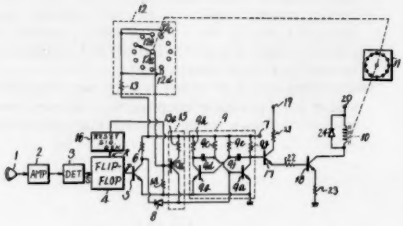
means for combining said partial in-phase demodulating signal with a quadrature rotated output of said local oscillator to form a complete in-phase demodulating signal having both frequency-offset and phase-jitter components, and

an in-phase demodulator responsive jointly to said received signal and to said complete in-phase demodulating signal to form a data output substantially free of frequency-offset and phase-jitter impairments.

3,849,731
CHANNEL SELECTING CONTROL SYSTEM FOR TELEVISION TUNER

Koji Morita, Tokyo, and Tadashi Sato, Yono, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 7, 1973, Ser. No. 358,142
Claims priority, application Japan, May 8, 1972, 47-45216
Int. Cl. H04n *5/49*
U.S. Cl. 325—464 **11 Claims**



1. A channel selecting control system for a television tuner comprising:

a. a turret-type channel selector which is rotatable through a plurality of positions corresponding to respective television channels,

b. driving means for rotating said turret-type channel selector to sequentially select said television channels,

c. means for producing a control signal,

d. pulse generating means for producing a pulse signal of a predetermined frequency in response to the control signal and for supplying the pulse signal to the driving means to rotate said channel selector in step by step fashion at timed intervals corresponding to the frequency of the pulse signal at said positions corresponding to television channels,

e. frequency control means connected to the pulse generating means, and

f. unused channel detecting means connected to the frequency control means for detecting at least one unused channel selected by said turret-type channel selector and for actuating said frequency control means so as to increase the frequency of the pulse signal, to thereby cause the turret-type channel selector to substantially skip the position corresponding to the unused channel.

3,849,732
PULSE GENERATOR FOR DELIVERING RECTANGULAR PULSES HAVING FAST RISE AND FALL TIMES

Jacques Pezot, Marcoussis, France, assignor to Commissariat A L'Energie Atomique, Paris, France

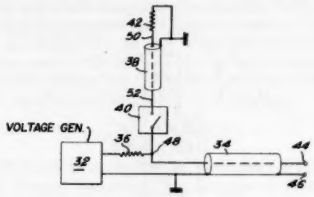
Filed Dec. 7, 1972, Ser. No. 313,041
Claims priority, application France, Dec. 17, 1971, 71.45436
Int. Cl. H03k *1/00, 3/04*
U.S. Cl. 328—59 **3 Claims**

1. A generator for producing electrical pulses having fast rise and fall times interrupting a steadily applied voltage by short periods of substantially zero output voltage, wherein said generator comprises

a direct-current high-voltage source;

a first transmission line connected at one end to a high impedance output load and connected at its other end over a high impedance to said high-voltage source, both said high impedances being high relative to the characteristic impedance of said transmission line; and

a second transmission line of substantially the same characteristic impedance as said first line and of a length relative



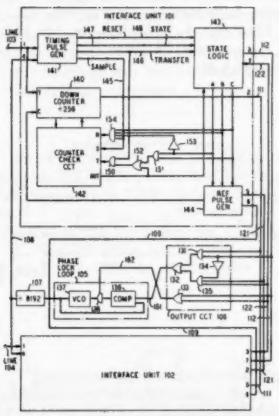
to that of said first line determined by the desired duty cycle of said pulses within the pulse period thereof, one end of said second line being terminated by as high impedance that is high relative to the characteristic impedance of the lines, and the other end being connected by means of a switch to that end of said first line at which said high impedance connected to said source is connected to said first line.

3,849,733

INTERFACE APPARATUS FOR RECEIVING AND MONITORING PILOT SIGNALS WHICH CONTROL A TIMING SIGNAL GENERATOR

Thomas Russell Lawrence, Omaha, Nebr., and Burton R. Saltzberg, Middletown, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed May 23, 1973, Ser. No. 363,299
Int. Cl. H03b *3/06*
U.S. Cl. 328—155 **14 Claims**



1. A circuit for comparing the phase of timing signals with the phase of clock signals comprising,

means for producing the timing signals, said producing means also including means for producing running indications defining phases of each cycle of the timing signals;

means for storing a phase-defining indication;

means for reading the running indication produced by the producing means when the clock signal is at a selected phase; and

means for comparing the read running indication and the stored indication;

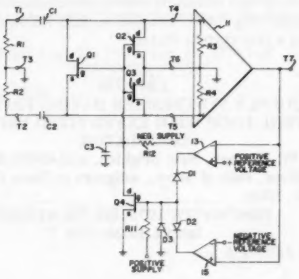
means responsive to a substantial comparison match for writing the read indication into the storing means to replace the stored indication.

3,849,734

SIGNAL PROCESSING APPARATUS

Robert W. Grass, Quincy, Mass., assignor to Grass Instrument Company, Quincy, Mass.

Filed Sept. 29, 1970, Ser. No. 76,536
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **2 Claims**



1. Signal processing apparatus comprising:

a differential input amplifier having a pair of input terminals and being operative to provide an output signal which is a relatively highly amplified function of an input signal applied to said input terminals;

means, including at least one coupling capacitor, for applying an input signal to said input terminals;

comparator means responsive to the output signal from said amplifier for generating a switching signal when said output signal passes above a first preselected level or below a second preselected level; and

switching means controlled by said switching signal for selectively shunting said input terminals, said switching means including at least one field-effect transistor, the drain-source circuit of which is connected across said input terminals, said switching means further including a respective field-effect transistor for each of said input terminals, the drain-source circuits of each of said respective transistor being connected between the respective input terminal and ground, whereby blocking of said amplifier by low frequency signals is minimized.

3,849,735

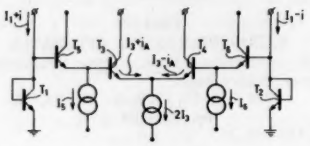
WIDE-BAND DIFFERENTIAL AMPLIFIER

Henricus Wijnandus Gerardus Haenen, and Bernardus Josephus Marie Overgoor, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 241,203, April 5, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 400,395
Claims priority, application Netherlands, Apr. 7, 1971, 7104636; Aug. 14, 1971, 7111226
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **6 Claims**

1. A circuit comprising a differential amplifier including a first differential pair of transistors having at least some difference in their conduction characteristics and a first pair of input elements means coupled to the bases of said transistors respectively for converting an input difference current into a difference voltage for application to said bases, said input elements having logarithmic conduction characteristics sub-

stantially corresponding to that of a semiconductor junction; a first follower circuit coupled between at least one of said elements and said respective base; and means for eliminating



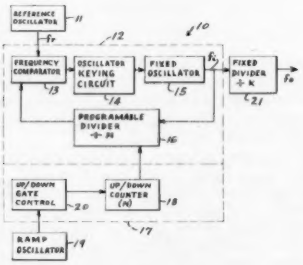
the effects of said transistor conduction characteristics difference comprising means coupled to said follower circuit for adjusting a bias current thereof.

3,849,736

FREQUENCY SYNTHESIZER HAVING FREQUENCY CONTROL LOOP WITH KEYED FIXED FREQUENCY OSCILLATOR

Donald W. Enerson, New Brighton, and Glenn R. Warfield, New Hope, both of Minn., assignors to Dana Corporation, Toledo, Ohio

Filed Nov. 19, 1973, Ser. No. 417,063
Int. Cl. H03b *3/04*
U.S. Cl. 331—1 A **5 Claims**



1. Apparatus for synthesizing from a reference signal a pulse train having an output frequency which is a predetermined Nth increment of the reference signal comprising, in combination, oscillator means for generating an intermediate signal, programmable divider means for dividing such intermediate signal by N to obtain a resultant signal, means for comparing such resultant signal with the reference frequency, means responsive to such comparison for controlling said oscillator means to maintain such intermediate signal N times the reference signal, means for dividing such intermediate signal by a predetermined constant to obtain the output pulse train, such constant determining the fraction of the reference signal for each increment, and means for selecting the Nth increment including a counter, said counter supplying the number N to said dividing means, and means for selectively counting said counter to the predetermined N.

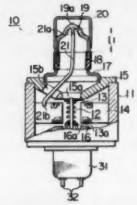
3,849,737

MAGNETRON WITH CHOKE STRUCTURE FOR REDUCING HARMONICS IN OUTPUT

Tomokatsu Oguro, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 13, 1973, Ser. No. 426,705
Claims priority, application Japan, Dec. 18, 1972, 47-144213; Jan. 16, 1973, 48-7073; Jan. 8, 1973, 48-5363
Int. Cl. H01j *23/32;* **H03b** *9/10*
U.S. Cl. 331—86 **18 Claims**

1. A magnetron comprising a cylindrical anode, a cathode disposed coaxially with the cylindrical anode, a plurality of vanes protruding from the inner face of the anode towards the cathode for forming cavity resonators, a cathode stem provided gas-tightly at one opening end of the cylindrical anode for supporting the cathode and insulating the cathode from the anode, a hollow insulating body having at least one opening provided on the side of the other opening end of the cylindrical anode in a gas-tight relation with the cylindrical anode,



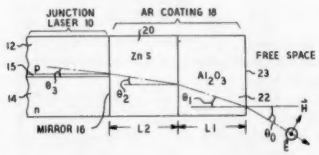
an output conductor one end of which is connected to one of the vanes and the other end of which extends in the hollow of the hollow insulating body, an output portion composed of at least the hollow insulating body and the output conductor, and a choke structure provided inside the output portion for blocking at least one of the harmonics contained in the microwave output of the magnetron.

3,849,738

MULTILAYER ANTIREFLECTION COATINGS FOR SOLID STATE LASERS

Basil Wahid Hakki, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 5, 1973, Ser. No. 348,161
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 H **11 Claims**



1. In a solid state laser, a body comprising
an active region capable of stimulated emission of radiation when suitably pumped,
said body having at least two parallel surfaces forming a resonator for sustaining said radiation, and
an antireflection coating formed on one of said at least two parallel surfaces,
characterized in that said coating comprises two contiguous layers of material, one of which has a refractive index less than, and one of which has a refractive index greater than, the square root of the refractive index of said active region, the thicknesses and refractive indices of said layers being mutually adapted to impedance match said coating to said active region.

3,849,739
LASER GLASS HOST COMPOSITIONS COMPRISING TeO_2, PbO AND ZnO

Richard F. Cooley, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

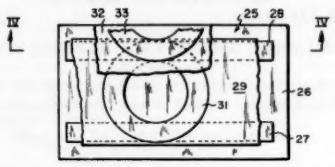
Filed June 27, 1973, Ser. No. 374,261
Int. Cl. H01s *3/00;* **C03c** *3/12, 3/30*
U.S. Cl. 331—94.5 E **8 Claims**

1. A laser glass host composition comprising TeO_2, PbO and ZnO in which the proportions in molar amounts of TeO_2, PbO and ZnO are defined by the area within the heavy lines connecting the points ABCDEF of the ternary diagram of the Figure of the drawings, the laser glass host composition being a host for an effective lasing amount of Nd_2O_3.

3,849,740
INTEGRATED OPTICAL AND/OR GATE

Gerald B. Brandt, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 1, 1973, Ser. No. 356,237
Int. Cl. H01s *3/05*
U.S. Cl. 331—94.5 C **8 Claims**



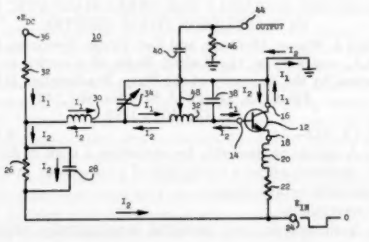
1. A thin film optical logic device comprising:

first and second optical waveguides for propagating optical energy at predetermined levels; a laser resonator including an active laser medium; means for positioning said laser medium close enough for evanescent coupling of optical energy propagating through said waveguides into said laser medium; said laser medium having a lasing threshold below the energy level of that optical energy coupled via at least one of said evanescent couplings; and an output waveguide positioned with respect to said laser medium for coupling into said output waveguide optical energy from said laser medium.

3,849,741
FAST RISE TIME OSCILLATOR

Lemuel D. Groom, III, Dallas, Tex., and Lavell Jordan, Jr., Plano, Colo., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 25, 1970, Ser. No. 75,422
Int. Cl. H03b *5/00, 11/00*
U.S. Cl. 331—165 **10 Claims**



1. A method of rapidly initiating oscillations in an oscillator, including a transistor having a junction, with a tuned circuit electrically connected across said junction, comprising the steps of:

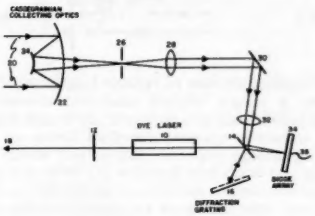
forward biasing said junction, and then

reverse biasing said junction to cause a rapid change in current in said junction thereby producing an internal transient in said tuned circuit which produces a rapid build up of oscillation.

3,849,742
SYNCHRONOUSLY TUNED LASER TRANSMITTER AND RECEIVER

Richard Swart Hughes, China Lake, and Julian L. Thompson, Keene, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 28, 1973, Ser. No. 374,748
Int. Cl. H01s *3/02*
U.S. Cl. 332—7.51 **9 Claims**



1. A synchronously tuned laser transmitter and receiver, comprising:

a laser including a laser cavity bounded at one end by an output mirror; a dual faced, reflective member in the path of the laser beam; and reflecting means at the opposite end of said cavity and in the reflective field of one face of said reflective member for retroflectively reflecting those wavelengths that are incident thereon at the retroflective angle unique to each wavelength;

a laser receiver for receiving the reflected output beam of said laser including collecting means for collecting the reflected beam received, processing and directing means for processing the beam into a form compatible with the detector used in said transmitter and receiver and directing said processed beam onto the other face of said reflective member, and a detector in the reflective field of said other face for providing an electrical output in response to said processed beam.

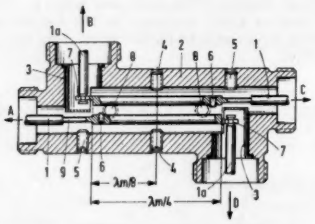
3,849,743
DIRECTIONAL QUARTERWAVE COAXIAL COUPLER HAVING MEANS TO AXIALLY MOVE THE COUPLING CONDUCTORS

Leo Treczka, Munchen, Germany, assignor to Spinner GmbH Elecktrotechnische Fabrik, Munchen, Germany

Filed Sept. 25, 1973, Ser. No. 400,658
Claims priority, application Germany, Sept. 28, 1972, 2247687
Int. Cl. H01p *5/02*
U.S. Cl. 333—10 **10 Claims**

1. A coaxial directional coupling for coupling electromagnetic energy at microwave frequencies, comprising an elongated coupler body of electrically conductive material having opposite ends each provided with an end connector opening and having an elongated main bore therethrough communicating with said end connector openings, said body having a lateral branch connector opening adjacent each end thereof opening in opposite directions and first and second branch

bore sections communicating the main bore with the branch connector openings along branch bore axes perpendicular with the longitudinal axis of the main bore, first and second straight internal main conductors disposed in adjacent parallel lapping relation over their major length paralleling the main bore axis each having an outer end extending through a diferent one of the end connector openings and an inner end portion crossing and terminating near the branch bore axis farthest from its outer end, said main conductors being axially movable in said main bore to provide quarter wavelength



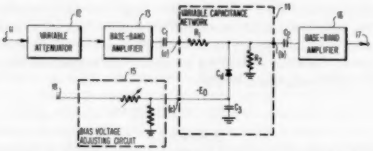
parallel lapping portions of variable length for different frequencies, a branch internal conductor extending axially through each branch bore perpendicular to said main conductors in respective opposite directions having an outer end projecting through respective ones of said branch connector openings and inner ends joined to the inner end portions of said main conductors, movable connection means at the inner ends of said main conductor and branch internal conductors permitting axial movement of the main conductors relative to the branch conductors while maintaining electrically conductive contact therebetween.

3,849,744

BASE-BAND DELAY EQUALIZER

Tadashi Furuya, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Apr. 24, 1973, Ser. No. 354,054
Claims priority, application Japan, May 4, 1972, 47-44822
Int. Cl. H03h *7/16*
U.S. Cl. 333—28 R **5 Claims**



1. A base-band delay equalizer for equalizing delay time for all the frequency components of a base-band signal of broad frequency bandwidth to be transmitted over an angle modulation transmission system, said equalizer being disposed at the base-band signal circuit of at least one of the transmitting or receiving ends of said transmission system and comprises in combination:

a variable-capacitance diode having a capacitance controllable in response to the voltage of said base-band signal applied thereto,

input means for supplying to said variable-capacitance diode said base-band signal,

output means for deriving from said variable-capacitance diode a delay-compensated base-band signal, said variable-capacitance diode being connected in shunt between said input and output means and ground,

a first resistor connected in series between said input means and the junction of said variable-capacitance diode with said output means,

a second resistor connected in common to said variable-capacitance diode and said output means and in shunt to ground such that the envelope time delay is approximated by

$$C_d\,(R_1R_2/R_1 + R_2)$$

where C_d is the junction capacity of said variable-capacitance diode and R_1 and R_2 are the resistances of said first and second resistors, respectively, and

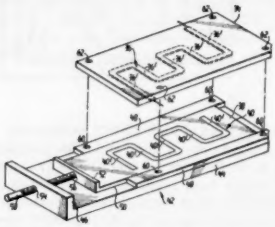
bias means for supplying to said variable-capacitance diode a direct-current bias voltage so as to set the non-input capacitance of said variable-capacitance diode at a suitable value.

3,849,745

METHOD AND SYSTEM FOR VARYING THE CHARACTERISTICS OF A DISPERSIVE DELAY LINE

James M. Schellenberg, Severna Park, and Raymond R. Jones, Mt. Airy, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1973, Ser. No. 327,030
Int. Cl. H03h *7/36;* **H01p** *1/18*
U.S. Cl. 333—31 R **8 Claims**



1. A variable delay line comprising:

a first substrate having a first electrically conductive strip embedded in one surface thereof, said first strip being configured to provide a plurality of spaced, electrically interactive, phase dispersive segments along the length thereof; and,

a second substrate overlying at least a portion of the one surface of said first substrate and including electrically conductive means electrically contacting said first strip for varying the spacing between said dispersive segments to thereby vary the electrical interaction between the segments of said first strip responsively to relative movement between said first and second substrates.

3,849,746

MOUNTING ASSEMBLY FOR FERROMAGNETIC CORE IN WAVEGUIDE PHASE SHIFTER

Robert J. Mason, Medford, and Earl Dixon, Voorhees, both of N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 18, 1973, Ser. No. 407,744
Int. Cl. H01p *1/32*
U.S. Cl. 333—24.1 **6 Claims**

1. A mounting assembly for mounting a core of ferrimagnetic material within a waveguide of a low-power, microwave phase-shifter comprising:

a waveguide;

a ferrimagnetic core mounted longitudinally within said waveguide;

a plurality of at least four dielectric pegs inserted in holes drilled in the waveguide walls with four of said holes lined up with the ends of said core and acting to hold said four

outer pegs, one hole being positioned on each side of the waveguide at each end of the core, the heads of said pegs protruding toward said ferrimagnetic core but leaving an appropriate clearance between said ferrimagnetic core and the peg-heads to allow for thermal expansion and acting to restrict the lateral motion of said core;

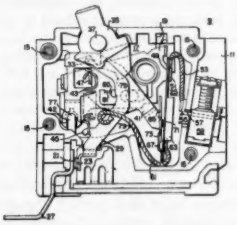
a plurality of dielectric transformers, one bonded to each end of said ferrimagnetic core and completely covering the ends of said core and overlapping the protruding heads of said four outer pegs so as to restrict longitudinal motion of said core with respect to said four outer pegs.

3,849,747

CIRCUIT BREAKER WITH HANDLE INDICATING MEANS

Stephen A. Mrenna, and Glenn R. Thomas, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 28, 1973, Ser. No. 419,744
Int. Cl. H01h 9/20
U.S. Cl. 335—166 **3 Claims**



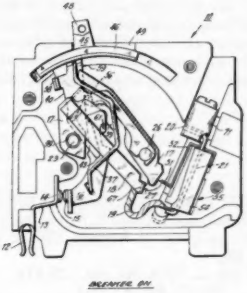
1. A circuit comprising an insulating housing having an opening in the front thereof, a circuit-breaker mechanism supported in said housing, said mechanism comprising a stationary contact, a movable contact, a contact arm supporting said movable contact, trip means, a releasable cradle, means pivotally supporting said cradle in proximity to one end thereof, said cradle at the other end thereof being latched on said trip means, an operating spring supported at one end thereof on said contact arm and at the other end thereof on said cradle, an operating member operatively connected to said contact arm and extending through said opening to permit manual operation of said circuit breaker, with said cradle in the latched position said operating member being manually movable between open and closed positions to operate said spring and said contact arm to thereby move said contact arm between open and closed positions, upon the occurrence of an overload current above a predetermined value said trip means releasing said cradle and said spring moving said cradle to a tripped position and said contact arm to the open position, following movement of said cradle to said tripped position said operating member being manually movable to the open position during which movement said operating member engages said cradle to move said cradle back to the latched position, blocking means on said contact arm engaging blocking means on said cradle to prevent movement of said cradle to the latched position when said contacts are welded closed and said cradle has been moved toward the tripped position, and said blocking means on said cradle striking said contact arm in an opening direction when said cradle is released and said contacts are welded closed whereby if the weld of said contacts is not a firm weld the striking action can break the weld to permit movement of said contact arm to the open position.

3,849,748

SMALL CIRCUIT BREAKER HAVING LARGE CONTACT SEPARATION

William T. Orriss, Bramalea, Ontario, Canada, assignor to ITE Circuit Breaker (Canada) Limited, Weston, Ontario, Canada

Filed Dec. 4, 1973, Ser. No. 421,533
Int. Cl. H01h 71/10
U.S. Cl. 335—174 **7 Claims**



1. A circuit breaker including stationary and movable cooperating contacts, a movable contact arm to which said movable contact is mounted,

a spring-powered mechanism for opening and closing said cooperating contacts by moving said movable contact arm, latch means for maintaining said mechanism in a reset condition wherein the cooperating contacts may be closed, fault responsive means for automatically releasing latch means to trip said mechanism whereby said cooperating contacts may not be closed, operating means including a handle for selectively operating said mechanism when in said reset condition to open and close said cooperating contacts, stop means for engaging said contact arm to limit separation between said cooperating contacts when the latter are open; said stop means being operatively constructed to limit circuit opening of said contact arm to a first position when said mechanism is reset and to limit circuit opening of said contact arm to a second position when said mechanism is tripped with separation between said cooperating contacts being substantially greater when said contact arm is in said second position as compared to this separation when said contact arm is in said first position; said mechanism including a releasable cradle; said stop means being carried by said cradle and being repositioned as said mechanism is tripped and reset; a stationary pivot upon which said cradle is mounted and a repositionable pivot to which one end of said contact arm is mounted; said repositionable pivot being on said cradle; said movable contact being at the other end of said contact arm.

3,849,749

DEFLECTION COILS PRODUCING PINCUSHION AND BARREL DEFLECTION FIELDS

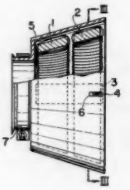
Tokuzo Kadota, Kadoma, Japan, assignor to Matsuhita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 12, 1973, Ser. No. 331,600

Claims priority, application Japan, Feb. 16, 1972, 47-16662; Feb. 28, 1972, 47-20883; Feb. 28, 1972, 47-20884

Int. Cl. H01f 7/00

U.S. Cl. 335—210 14 Claims



1. A deflection yoke comprising a plurality of deflection coils arranged contiguously along a tube axis, and wherein the deflection field of said deflection coil located in the center of said plurality of deflection coils is distributed in a barrel magnetic field distribution, and the deflection field of said deflection coil located on each side of said centrally located deflection coil is distributed in a pincushion magnetic field distribution.

3,849,750

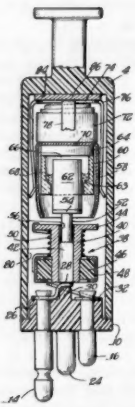
LINE PROTECTOR FOR A COMMUNICATION CIRCUIT

Bertram W. Baumbach, and Richard E. Nelson, both of Arlington Heights, Ill., assignors to Reliable Electric Company, Franklin Park, Ill.

Filed Jan. 2, 1974, Ser. No. 429,871

Int. Cl. H01h 39/00

U.S. Cl. 337—32 15 Claims



1. A line protector for a communications circuit comprising a housing of insulating material and including a base, line terminals in said base, a ground terminal in said base, overvoltage protective means in spaced relation to said base, said protective means having spaced electrodes forming an arc gap, means forming a line circuit between said line terminals, first means forming a grounding circuit between one electrode and said ground terminal, second means forming a conductive connection between said line circuit and the other electrode, and longitudinally extensible spring means biasing said protective means toward said base, said spring means forming part of said ground circuit, said spring means, said protective means and said second means being structures that are in line within the housing and are substantially coaxial.

3,849,751

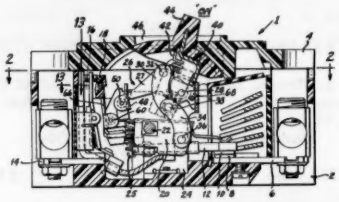
ELECTRIC CIRCUIT BREAKERS

Donald A. Link, Hubertus, and Fred H. Williams, Oshkosh, both of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Feb. 6, 1973, Ser. No. 330,031

Int. Cl. H01h 71/16

U.S. Cl. 337—59 11 Claims



1. In an electric circuit breaker, the combination with an insulating housing, stationary contact means in said housing, movable contact means and an operating mechanism in said housing for said movable contact means including an operating handle pivotally movable between ON and OFF positions, latch means movable between latched and unlatched positions, collapsible toggle linkage connected to said latch means and spring means connected between said latch means and said toggle linkage and movable by said handle over center of said linkage to actuate the latter between essentially collapsed and straightened positions to effect operation of said movable contact means between open and contact engaged positions with said stationary contact means, of second spring means normally out of engagement with said movable contact means and means responsive to movement of said toggle linkage to transmit the large operating force developed by said toggle linkage when it assumes a generally in-line position to said second spring means to provide corresponding contact closing force between said movable and stationary contact means.

3,849,752

CURRENT RESPONSIVE ACTUATOR

Eric W. Bayer, Wolcott, Conn., assignor to General Electric Company, New York, N.Y.

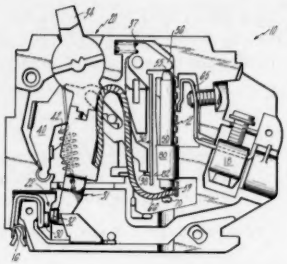
Filed Aug. 2, 1973, Ser. No. 384,985

Int. Cl. H01h 62/02

U.S. Cl. 337—77 14 Claims

1. In a circuit breaker having a pair of terminals, an internal electrical circuit breaker between the circuit breaker terminals comprising an electrical switch and a current responsive actuator, a switch operating device operable for opening and closing the switch and having a switching member actuated by the current responsive actuator when the actuator current exceeds a predetermined level to open the circuit breaker switch, the improvement wherein the current responsive actuator comprises a thrust support and an elongated thermally sensitive expansion plunger extending longitudinally from the thrust support and longitudinally expandable from the thrust

support upon being heated to actuate the switching member to open the switch, the current responsive actuator having an electrical impedance in the internal electrical circuit effective



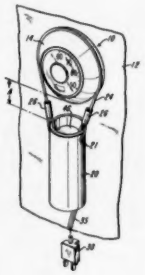
to heat and thereby longitudinally expand the expansion plunger to actuate the switching member to open the switch when the actuator current exceeds said predetermined level.

3,849,753

HEATER ATTACHMENT DEVICE FOR A WALL-MOUNTED THERMOSTAT

Robert A. Nichols, Xenia, Ohio, assignor to Capital Enterprises, Inc., Dayton, Ohio

Filed June 7, 1973, Ser. No. 367,862
Int. Cl. H01h *61/02*
U.S. Cl. 337—102 **11 Claims**



1. A heating device adapted for temporary use with a wall-mounted thermostat connected to control a heating system to provide for a controlled reduction in the operation of the heating system below the effective operating control range of the thermostat, said device comprising an electrical heating element, a housing having an upper end portion and a lower end portion and defining an air flow passage extending between said end portiOns, means on said housing for supporting said heating element adjacent said passage to provide for a flow of air generally upwardly within said passage in response to heating of the air within said passage by said heating element, an electrical power supply cord connected to said heating element and extending from said housing for connection within an electrical power supply, and means for temporarily supporting said housing below the thermostat in a position where said passage directs the heated air upwardly into the thermostat.

3,849,754

CURRENT LIMITING FUSE

Donald D. Blewitt, Pittsburgh, and Woodrow G. Shaw, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 17, 1973, Ser. No. 407,335
Int. Cl. H01h *85/16*
U.S. Cl. 337—231 **8 Claims**

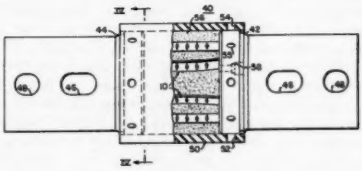
1. A fuse structure comprising a generally tubular, electrically insulating casing, terminal means disposed adjacent to each of the opposite ends of said casing, an axially-extending, electrically insulating support member disposed in said casing with the ends disposed adjacent to the respective terminal means, a fusible element disposed in a helical path on said support member and connected between said terminal means, the insulating support member being a segmented member comprising at least two connected longitudinal sections, one section being a high temperature electrically insulating material, and the other section being a low temperature electrically insulating material.

3,849,755

CURRENT LIMITING FUSE WITH FUSE ELEMENT WITH A DIAMOND SHAPED CUTOUT

Donald D. Blewitt, Pittsburgh, and Woodrow G. Shaw, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 28, 1973, Ser. No. 401,765
Int. Cl. H01h *85/04*
U.S. Cl. 337—295 **7 Claims**



1. An electrical fuse, comprising:
a. a tubular casing of electrical insulating material;
b. spaced terminals disposed adjacent portions of said casing; and

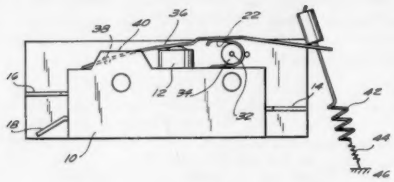
c. a fuse element of electrically conductive material disposed within said casing and electrically connected to said spaced terminals for interrupting electrical current flowing through said fuse when said current is of a predetermined value, said electrically conductive material having a central opening therein, said central opening enclosing as one part of the periphery thereof an angle substantially in the range of 30° to 45°, said angle having an apex which is spaced from one surface of said electrically conductive material by a predetermined distance to thereby provide an electrically resistive region of reduced cross section, the bisector of said angle being perpendicular to said one surface within a predetermined range, the radius of curvature of said apex of said angle being smaller than said distance between said apex and said one surface by a predetermined amount to thereby reduce the electrical resistance of said conductive material adjacent said region of reduced cross section, the length of at least one peripheral side of said angle being larger by a predetermined amount than said predetermined distance between said apex and said one side.

3,849,756

NITINOL ACTIVATED SWITCH USABLE AS A SLOW ACTING RELAY

Colin D. Hickling, Woodstock, N.Y., assignor to American Thermostat Corporation, South Cairo, N.Y.

Filed June 14, 1973, Ser. No. 369,852
Int. Cl. H01h *37/50*
U.S. Cl. 337—382 **10 Claims**



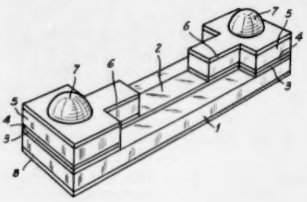
1. Apparatus for changing the state of a switch in accordance with the current in a conductor, said switch being of the type having a pair of relatively movable contacts normally biased to retain the switch in a first state and an actuating member for relatively moving the contacts against the bias to place the switch in a second state, said apparatus comprising a housing for said switch, a conductor, means operatively connected to said conductor for controlling the current flowing therethrough, said conductor generating thermal energy in accordance with the current flowing therethrough, a lever pivotally mounted on said housing, said lever being movable between a first position wherein said lever is operably connected to said actuating member to actuate said member and a second position wherein said lever is operably disconnected from said actuating member, and a thermally activated deformation element in thermal communication with said conductor and having a first portion operably connected to said actuating member and a second portion operably connected to said lever, said first and second portions being relatively close to one another when said element is in the undeformed state, said element deforming to move said first and second portions away from each other where the thermal energy generated by said conductor exceeds a given level such that said lever is moved to said second position and said actuating member is actuated.

3,849,757

TANTALUM RESISTORS WITH GOLD CONTACTS

Robert Khammous, Chickli-Pariente; Andre Langlet, Paris, and Michel Leclercq, Levallois-Perret, all of France, assignors to Compagnie Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 6, 1973, Ser. No. 422,463
Claims priority, application France, Dec. 14, 1972, 72.44558
Int. Cl. H01c *1/16*
U.S. Cl. 338—320 **12 Claims**



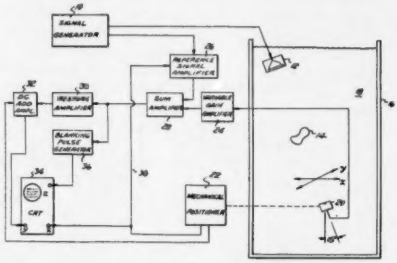
1. An electrical device comprising a resistive element formed by a thin metal strip borne by a rigid, electrically insulating substrate, and a plurality of contact means for said resistive element, said resistive element formed of a tantalum strip and a superposition of a layer of molybdenum and a layer of gold, with a gold dome disposed on each of said contact means.

3,849,758

SYSTEM FOR MAKING BINARY ACOUSTIC HOLOGRAMS

Jerome L. Pfeifer, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 15, 1973, Ser. No. 341,445
Int. Cl. G01s *9/66*
U.S. Cl. 340—5 H **36 Claims**



1. A system for making binary acoustic holograms of an object comprising:

means for generating electrical energy;

first means receiving said electrical energy for producing coherent acoustic energy, said coherent acoustic energy irradiating said object;

second means receiving said electrical energy for producing a reference electrical signal having the same frequency as said electrical energy with a predetermined phase and amplitude;

means detecting said acoustic energy incident on a hologram plane in the proximity of said object for generating, on a point-for-point basis, detected electrical signals indicative of the intensity of said acoustical energy, including means for generating signals indicative of the X and Y axis positions of said points with respect to said hologram plane;

means responsive to said reference electrical signals and said detected electrical signals for generating phase modulated signals indicative of the intensity and phase of said detected acoustic energy;

means responsive to said phase modulated signals for generating a blanking signal when the amplitude component of said phase modulated signal is less than a predetermined value;

means responsive to said phase modulated signal and said Y position signal for summing said phase modulated signals and said Y position signal generating a Y biased signal; and

means responsive to said Y biased signals, said Y position signal and said blanking signal for generating a binary interference pattern.

3,849,759

FAULT DETECTOR FOR MOTOR VEHICLE SAFETY DEVICE

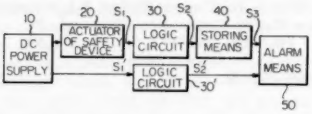
Akio Hosaka; Kosaku Baba, both of Yokohama, and Kiyoshi Wazawa, Fujisawa, all of Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Filed Feb. 15, 1973, Ser. No. 332,762

Claims priority, application Japan, Feb. 19, 1972, 47-19982[U]

Int. Cl. G08b *21/00*

U.S. Cl. 340—52 R **8 Claims**



1. A fault detector for an actuator of a safety device for a motor vehicle having an electrical DC power supply, which comprises: a logic circuit comprising a plurality of comparators responsive to internal signals in an electrical circuit of a safety device actuator, an inverter receptive of a logic output signal of one of said comparators, and a first NAND gate receptive of logical output signals of said inverter and the remaining ones of said comparators to develop a logic circuit output signal; a fault memory means for developing a continuous output signal in response to a logic circuit output signal representative of a fault in the safety device actuator; and an alarm actuated in response to said output signal from said memory means.

3,849,760

MULTI-DIMENSIONAL PATTERN RECOGNITION PROCESSOR

Hirohide Endou, Kokubunji; Jun Kawasaki; Yoshiji Fujimoto, both of Hachioji; Keiichi Nakane, Kokubunji, and Yoshiaki Kitazume, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 11, 1972, Ser. No. 270,873

Claims priority, application Japan, July 12, 1971, 46-51609; Nov. 10, 1971, 46-89022; Apr. 28, 1972, 47-42217

Int. Cl. G06k *9/00*

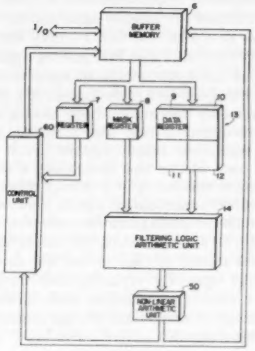
U.S. Cl. 340—146.3 H **7 Claims**

1. A multi-dimensional pattern recognition processor comprising

a pattern data register unit for storing information of individual picture elements of a multi-dimensional original pattern,

a mask register unit for designating a multi-dimensional weight information pattern applied to the pattern information of the individual picture elements of the original pattern,

a plurality of multiplier groups for simultaneously carrying out the multiplication on all the picture elements of the original pattern such that pattern information signals representative of the picture elements of the original pattern derived from said pattern data register unit are multiplied by weight information signals derived from the corresponding picture element portions of said mask register unit, and



a plurality of adders each associated with one of said multiplier groups for carrying out the addition of the results of multiplication by said multiplier groups,

wherein weight information stored in said mask register unit is changed to various forms so that said original pattern information can be suitably processed depending on said changed weight information.

3,849,761

COMMUNICATION SYSTEM

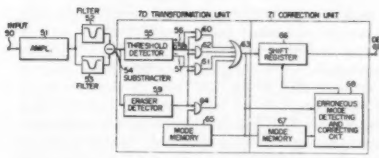
Masao Kasahara, Kyoto; Toshihiko Namekawa, Kobe; Keniti Fujiwra, Amagasaki; Shigeiti Hirasawa, Amagasaki, and Yasuo Sugiyama, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1972, Ser. No. 240,172

Claims priority, application Japan, Sept. 17, 1971, 46-72228

Int. Cl. G06f *11/00*; **G08c** *25/00*

U.S. Cl. 340—146.1 R **4 Claims**



1. A communications system comprising, a plurality of signal repeaters having a first signal repeater receptive of a transmitted signal, a sequence of repeaters receptive of an output signal from a previous repeater and a last repeater, said received signal corresponding to a sequence of information code blocks and at least one checking code block, each information code block being an n-bit binary coded word corresponding to a redundantly encoded piece of information selected from a subset of a set of all n-bit binary code words, and said checking code block being an n-bit binary code word selected from a subset of n-bit binary code words not includ-

ing said subset of information code blocks, said last repeater comprising first detection means receptive of said signal to develop output signals corresponding to a binary one signal, binary zero signal or an ambiguous signal ambiguous as to logic content thereof, first memory means receptive of said first detector output signals for storing said first detector output signals therein, circuit means receptive of said first detector output signal corresponding to said ambiguous signal levels to store said first detector output signal and develop a first control signal in response thereto, a transformation circuit receptive of said first control signal and said first detector output signals stored in said first memory means for transforming under control of said first control signal an information code block having an ambiguous signal level into a transformed code block selected from a subset of n-bit binary code words not including information code blocks, second detection means receptive of said first detection means output signals from said code transformation circuit for detecting transformed code blocks and developing a second control signal in response thereto, second storage means receptive of said first detection means output signals from said code transformation circuit for storing said first detection means output signals therein, an error detecting and correcting circuit connected to said second storage means and receptive of said second control signal for replacing said transformed code block with a correct information code block, and output means connected to said second storage means for providing corrected output signals.

3,849,762

DIGITAL INFORMATION PROCESSING APPARATUS FOR PATTERN RECOGNITION

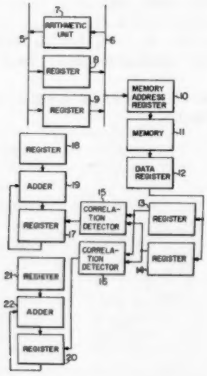
Yoshiji Fujimoto, Hachioji; Toshihiro Hananoi, Matsudo; Michio Yasuda, Koganei; Hiroshi Makihara, Kokubunji; Masaru Kuramizu, Hachioji; Minoru Ota; Hiroshi Kokido, both of Odawara, and Shozo Kadota, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 7, 1973, Ser. No. 338,888

Claims priority, application Japan, Mar. 8, 1972, 47-23092

Int. Cl. G06k *9/00*

U.S. Cl. 340—146.3 Q **6 Claims**



1. A digital information processing apparatus for pattern recognition comprising: a memory unit for storing a piece of information representing an unknown pattern and M pieces of information representing M standard patterns (M being a given integral number) in a predetermined sequence of addresses word by word, each piece of information including N words (N being a given integral number); memory address register means for designating in said predetermined sequence the N (M + 1) addresses of said memory unit at which said M + 1 pieces of information are stored so that each piece of information of said unknown pattern and said M standard patterns is read out of said memory unit word by word in said predetermined sequence; data register means for temporarily storing each piece of information read out of said memory unit word by word; first register means for storing only said information of said unknown pattern selectively transferred from said data register means; second register means for storing only said plurality of pieces of information of said standard patterns selectively and sequentially transferred from said data register means; M correlation constant registers each storing a predetermined correlation constant corresponding to each of said M standard patterns; M correlation detectors each comparing said information of said unknown pattern stored in said first register means with said information of one of said standard patterns stored in said second register means by means of each bit and detecting the number of times of agreement between said unknown pattern and said standard pattern; and M adders provided for the respective one of said M standard patterns each for adding said correlation constant stored in a corresponding one of said correlation contant registers by the number of times of the agreement between said unknown pattern and said standard pattern in response to an output from said correlation detector, whereby the similarity between said unknown pattern and each of said M standard patterns is determined on the basis of the content of each of said adders.

3,849,763

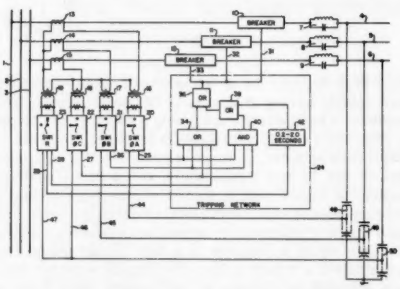
CHANNEL DELAY CHECKBACK APPARATUS

James E. Greene, Jr., Convent Station, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 29, 1973, Ser. No. 392,691

Int. Cl. H04q *1/20*

U.S. Cl. 340—147 R **21 Claims**

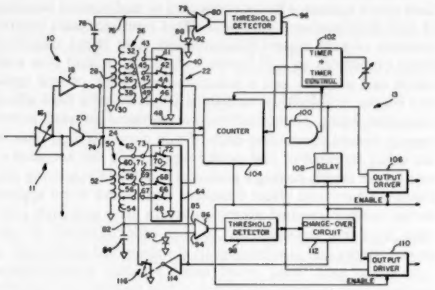


1. A channel measuring device comprisng a trnsmitter adapter to be connected to said channel for supplying a first control signal thereto, a receiver adapter to be connected to said channel for receiving a second signal therefrom said receiver providing a third control signal when initially energized by said second signal, first and second timing networks, said first and second timing networks having first and second timing periods, said first and second periods determining respectively the minimum and maximum acceptable time limits of said channel, means for concurrently initiating the timing out of said timing networks and the initiating of the operation of said transmitter to transmit said first signal, a comparing network having a plurality of input circuits and an output circuit, a first and a second of said input circuits being operatively connected to said first and second timing networks respectively for actuation thereby, a third of said input circuits being connected to said receiver for actuation by said third control signal when said receiver is receiving said second control signal, said comparing network being adapted to provide a fourth control signal when said third control signal is supplied to its said third input solely prior to the timing out of said first timing network and subsequent to the timing out of said second timing network.

3,849,764
PROGRAMMABLE FREQUENCY DECODER

Kuei-Seng Wang, Flemington; Philip L. Epstein, Elizabeth, and John Hsueh Chung Lu, East Orange, all of N.J., assignors to Quindar Electronics, Inc., Springfield, N.J.

Filed May 29, 1973, Ser. No. 364,684
Int. Cl. H04q 9/12; H04m 11/00
U.S. Cl. 340—171 R 12 Claims



1. A decoding system comprising:

a. input means adapted to receive a series of multifrequency signals arranged in a particular sequence, each said multifrequency signal including one frequency from a first group of frequencies and one frequency from a second group of frequencies;

b. first and second decoding means operatively connected to said input means, said first decoding means including first and second tuned networks, said second decoding means including at least third and fourth tuned networks, said first tuned network responsive to a first frequency in said first group of frequencies, said second tuned network responsive to a second frequency in said first group of frequencies, said third tuned network responsive to a first frequency in said second group of frequencies, said fourth tuned network responsive to a second frequency in said second group of frequencies;

c. control means operatively connected to said first and second decoding means for selectively forming said first, second, third and fourth tuned networks in a particular sequence; and

d. output means operatively connected to said control means and said first and second decoding means for generating a command signal, said output means generating said command signal when the frequencies in the sequence of said multifrequency signals applied to said input means corresponds to the frequencies to which said first, second, third, and fourth tuned networks are sequentially responsive.

3,849,765
PROGRAMMABLE LOGIC CONTROLLER

Goro Hamano, Osaka, Japan, assignor to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan

Filed Nov. 20, 1972, Ser. No. 307,791
Claims priority, application Japan, Nov. 30, 1971, 46-97005; Nov. 30, 1971, 46-97006; Mar. 17, 1972, 47-27779
Int. Cl. G06f 3/00, 9/00
U.S. Cl. 340—172.5 8 Claims

1. A programmable logic controller for controlling a device having at least one input and at least one output comprising:

main memory means for storing a plurality of programs, each of said plurality of programs consisting of a sequence of instructions, each instruction comprising an output part, an input part and two destination address parts;

auxiliary memory means for storing a plurality of program addresses corresponding to said plurality of programs;

program select register means operatively connected to said auxiliary memory means for selecting one of said plurality of program addresses stored in said auxiliary memory means;

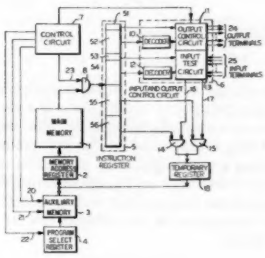
address reading means operatively connected to said auxiliary memory means for reading out the program address in said auxiliary memory means selected by said program select register means;

memory address register means operatively connected to said main memory means and to said auxiliary memory means for addressing said main memory means with said program address read out by said address reading means;

instruction reading means operatively connected to said main memory means for reading out the instruction in said main memory means addressed by said memory address register means;

instruction register means operatively connected to said main memory means for storing said instruction read out by said instruction reading means;

input and output control circuit means operatively connected to said instruction register means and to said device and having a plurality of input terminals to which said at least one input of said device is connected and a plurality of output terminals to which said at least one output of said device is connected, said input and output control circuit means including a decoder means operatively connected to said instruction register means for selecting one of said plurality of output terminals speci-



fied by said output part of said instruction stored in said instruction register means, means operatively connected to said decoder means for energizing and deenergizing the output connected to the output terminal selected by said decoder means in accordance with said output part of said instruction stored in said instruction-register means, a second decoder means operatively connected to said instruction register means for selecting one of said plurality of input terminals specified by said input part of said instruction stored in said instruction register means, comparing means operatively connected to said second decoder means for comparing the input connected to the input terminal selected by said second decoder means with the condition specified by said input part of said instruction stored in said instruction register means, and selecting means, connected to said comparing means and responsive to the result of the comparison for selecting one of two destination address parts of said instruction in said instruction register means depending upon said result of said comparison;

destination address reading means operatively connected to said instruction register means and to said selecting means for reading out the destination address part of said instruction stored in said instruction register means selected by said selecting means;

temporary register means operatively connected to said instruction register means for storing said destination address part read out by said destination address reading means;

writing means operatively connected to said auxiliary memory means for writing said destination address part in said temporary register means into the same location of said auxiliary memory means from which said program address was read out by said address reading means; and

means operatively connected to said program select register means for causing said program select register means to select a different program address after said destination address is written into said auxiliary memory means by said writing means.

3,849,766

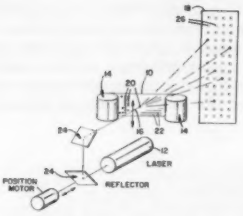
DATA STORAGE AND RETRIEVAL SYSTEM

Ted J. Crowther, Saratoga; Charles F. Jacobson, Cupertino, and Kent K. Sutherlin, Mountain View, all of Calif., assignors to Optical Data Systems, Inc., Mountain View, Calif.

Filed May 18, 1972, Ser. No. 254,589

Int. Cl. G11c *13/04*

U.S. Cl. 340—173 LM **5 Claims**



1. A data storage and retrieval method comprising the steps of recording a multiplicity of holograms in a plurality of longitudinal rows on a strip of photographic film, the holograms in each row being independent of the holograms in the other rows, directing a single light beam at the film strip, deflecting the beam to a desired row on the strip, moving the film parallel to the rows past the beam, and detecting images formed by the beam from holograms in the desired row as the film strip passes the beam.

3,849,767

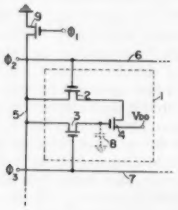
MEMORY CIRCUIT

Hajime Shirato, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Oct. 23, 1973, Ser. No. 408,578

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 DR **5 Claims**



1. A memory circuit having memory cells arranged in matrix form, a "read" word line and a "write" word line provided at each row of said matrix, a common digit line provided at each column of said matrix, and a power supply, each of said memory cells comprising first, second and third insulated-gate field effect transistors each having a control terminal, an input terminal and an output terminal, said output terminal of said first insulated-gate field effect transistor and said input terminal of said second insulated-gate field effect transistor being connected to said common digit line at the matrix column where said memory cell is located, said input terminal of said first insulated-gate field effect transistor being connected to one of said input and output terminals of said third insulated-gate field effect transistor, said control terminal of said first insulated-gate field effect transistor being connected to said "read" word line of the row with which said memory cell is associated, said output terminal of said second insulated-gate field effect transistor being connected to said control terminal of said third insulated-gate field effect transistor, said control terminal of said second insulated-gate field effect transistor being connected to said "write" word line at said row with which said memory cell is associated, the other of said input and output terminals of said third insulated-gate field effect transistor being connected to one terminal of said power supply, means connecting each of said common digit lines to the other terminal of said power supply, said one terminal of said power supply having a potential capable of rendering said insulated-gate field effect transistor conductive when applied to the control terminal thereof, wherein after said each common digit line is connected to said other terminal of said power supply and is subsequently disconnected therefrom, at least one of said "read" word lines is selected an information in phase with information stored in said memory cell coupled to the selected "read" word line is read out to said common digit line.

3,849,768

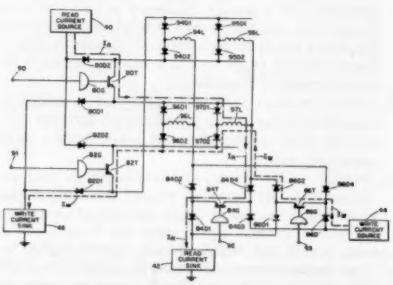
SELECTION APPARATUS FOR MATRIX ARRAY

Srirama S. Durvasula, Westboro, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Dec. 18, 1972, Ser. No. 316,334

Int. Cl. G11c *7/00, 11/02*

U.S. Cl. 340—174 TB **13 Claims**

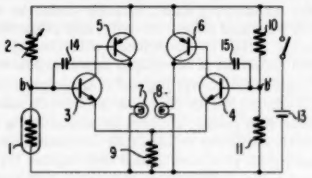


1. Selection apparatus for a matrix having a plurality of loads, said apparatus comprising a plurality of selection means having a first pair of said selection means coupled to provide a first current to one of said loads and having a second pair of said selection means coupled to provide a second current to said one of said loads, said plurality of selection means further comprising means for coupling said first pair of said selection means to provide said second current to another one of said loads and means for coupling said second pair of said selection means to provide said first current to said another one of said loads, wherein each of said loads includes two ends and wherein each of said selection means includes a transistor such that a pair of said selection means includes two transistors, said transistors in said first pair coupled to different ends of at least two of said loads for providing a current path therethrough, and said transistors in said second path therethrough, and said transistors in said second pair coupled to different ends of at least two of said loads for providing a current path therethrough.

3,849,769
INDICATING APPARATUS

Yoshio Chiba, 168-30 Ninchi, Yawata-cho, Toyokawa, Japan

Continuation of Ser. No. 250,364, May 4, 1972, abandoned.
This application Sept. 11, 1973, Ser. No. 396,318
Claims priority, application Japan, May 4, 1971, 46-29652
Int. Cl. G08b 21/00; G01j 1/44
U.S. Cl. 340—213 R 8 Claims

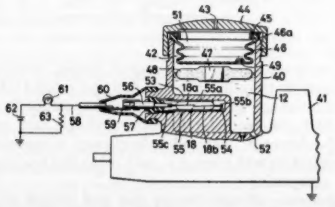


1. An indicating apparatus comprising:
first and second transistors the emitters of which are commonly connected to a common-emitter resistance;
a first voltage divider circuit comprising a photoconductive element for receiving light to be measured and a variable resistor for setting an appropriate range of light to be measured, the output of said first voltage divider circuit being connected to the base of said first transistor;
a second voltage divider circuit comprising a pair of fixed resistors, the output of said second voltage divider circuit being connected to the base of said second transistor;
a first output transistor, the base of which is connected to the collector of said first transistor;
a first indicator lamp connected to the collector of said first output transistor;
a second output transistor, the base of which is connected to the collector of said second transistor;
a second indicating lamp connected to the collector of said second output transistor;
a first feedback capacitor connected to positively feedback the output of said first output transistor to the base of said first transistor;
a second feedback capacitor connected to positively feed back the output of said second output transistor to the base of said second transistor; and
means for connecting a D. C. power supply to said transistors and voltage divider circuits.

3,849,770
DEVICE FOR DETECTING DECREASE OF LIQUID IN A LIQUID RESERVOIR

Yoshihiro Hayashida, Chigasaki, Japan, assignor to Tokico Ltd., Kawasaki, Kanagawa-ken, Japan

Filed Apr. 24, 1973, Ser. No. 354,003
Claims priority, application Japan, Apr. 25, 1972, 47-49285
Int. Cl. G08b 21/00
U.S. Cl. 340—244 E 5 Claims

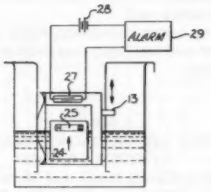


1. A device for detecting decrease of liquid comprising: a liquid reservoir storing liquid therein, said liquid reservoir having a lower bottom surface and including a shoulder portion projecting from said lower bottom surface, said shoulder portion being provided in the vicinity of the upper surface thereof with a blind hole extending substantially horizontally in the shoulder portion; a conduit disposed in proximity to the lower bottom surface of the liquid reservoir, said conduit being at a level lower than the blind hole and communicating with the interior of the liquid reservoir; float means movable upwardly and downwardly with change of quantity of the liquid in the reservoir; a permanent magnet centrally secured in said float means and having magnetic poles disposed vertically, said permanent magnet being of a columnar configuration; a normally open reed switch disposed in said blind hole in the shoulder portion of the liquid reservoir, said reed switch including reeds with contact portions disposed at a position transversely offset from the axis of the permanent magnet by a distance at least equal to the radius of the permanent magnet; said reed switch being closed by a horizontal component of magnetic flux from the permanent magnet when the liquid decreases below a predetermined level and said permanent magnet with said float means has reached a position of a predetermined spacing from the reed switch; and means coupled to said reed switch for producing an output signal upon closing of the reed switch.

3,849,771
LIQUID LEVEL ALARM

Ronald Applin, 6219 Esplanade, Playa Del Rey, Calif. 90291

Filed Jan. 24, 1973, Ser. No. 326,562
Int. Cl. G08b 21/00
U.S. Cl. 340—245 5 Claims



1. A liquid level alarm which comprises:
a. a hollow tubular member, said tubular member having openings therein whereby when said tubular member is partially immersed in liquid, the liquid level within said tubular member will be substantially the same as the liquid level surrounding said member;
b. a hook on said tubular member whereby said tubular member can be supported substantially vertically on the rim of an open vessel;
c. a cage member slideably positioned within said hollow tubular member;
d. a magnetic reed switch mounted on the top portion of said cage member;
e. a float within said cage member;
f. a permanent magnet secured to said float whereby when said float rises in said cage said magnetic reed switch will be actuated.

3,849,772
CIRCUIT INTEGRITY CHECKING MEANS FOR AUDIO SIGNAL CIRCUIT

Roy Clair Burnett, Owen Sound, Canada, assignor to General Signal Corporation, Rochester, N.Y.

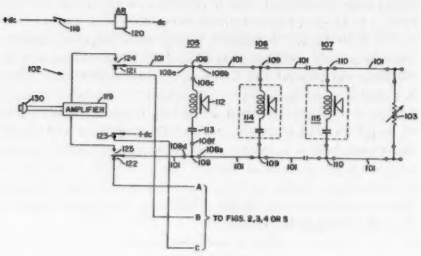
Filed Aug. 6, 1973, Ser. No. 386,136
Claims priority, application Canada, Sept. 6, 1972, 151078
Int. Cl. G01r 31/02; G08b 19/00
U.S. Cl. 340—256 18 Claims

1. A direct current supervisory circuit for verifying the circuit integrity of a cable pair across which a plurality of audio devices may be bridged and comprising:

a. a direct current blocking device in series with each of said audio devices for restricting the passage of direct current through said audio devices;

b. an impedance bridged across said cable pair, near the remote end thereof, for providing a direct current circuit across said cable pair; and

c. a three state line supervisory sensor in series with a direct current power supply and selectively bridged across the near end of said cable pair for;



1. indicating the circuit continuity of said cable pair when said line supervisory sensor is in a first of its three states;

2. indicating the lack of circuit continuity of said cable pair when said line supervisory sensor is in a second of its three states; and

3. indicating a low impedance, shunt across said cable pair when said line supervisory sensor is in a third of its three states.

3,849,773

APPARATUS FOR DISPLAYING CHARACTERS AND/OR LIMITED GRAPHS

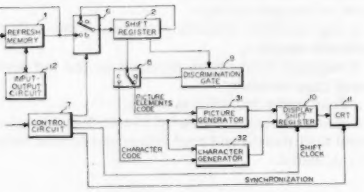
Toshiaki Katahira; Hiroshi Izumi, and Masao Tokonami, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Osaka, Japan

Division of Ser. No. 112,201, Jan. 22, 1971, abandoned. This application Mar. 12, 1973, Ser. No. 340,103

Claims priority, application Japan, Feb. 16, 1970, 45-13638; Feb. 27, 1970, 45-17299

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **1 Claim**



1. An apparatus for displaying characters and limited graphs on a cathode ray tube of a standard television system, each character being displayed at a character area on said cathode ray tube, which character area is divided into (S-1) blocks for picture element display, the apparatus comprising:

an input-output circuit;

a refresh memory circulating at a clock frequency;

a character generator;

a picture element generator;

means coupled to said input-output circuit and said refresh memory for entering character codes of plural lines from said input-output circuit into said refresh memory, each character code being formed by S bits, one of which is a discrimination bit for discriminating whether to drive said character generator or to drive said picture element generator and the others of which correspond to said (S-1) blocks of each character area;

a shift register operatively coupled to said character generator and said picture element generator; and

means coupled to said shift register and said refresh memory for transferring said character codes to said shift register from said refresh memory, said character generator being driven in accordance with the value of said discrimination bit of the output signals produced by said shift register for converting said output signals into video signals which produce character patterns on said cathode ray tube, said picture element generator being driven in accordance with the value of said discrimination bit of the output signals produced at said shift register for converting said output signals produced at said shift register into video signals which produce picture element patterns on said cathode ray tube, whereby when it is determined in accordance with the discrimination bit in each of some predetermined character codes to drive said picture element generator, said picture element generator is driven by the output signals produced at said shift register and generates picture elements in some blocks of predetermined character areas in accordance with the value of each of said (S-1) bits of said some predetermined character codes so as to enable a display of a limited graph on said cathode ray tube, so that characters and limited graphs in a predetermined pattern can be displayed on said cathode ray tube.

3,849,774

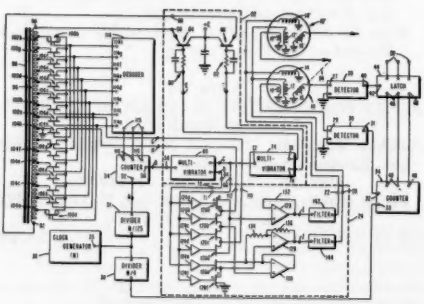
ANALOG-TO-DIGITAL CONVERTER EMPLOYING AN ELECTROMAGNETIC RESOLVER

Seymour Barth, Searingtown, N.Y., assignor to Astrosystems, Inc., Lake Success, N.Y.

Filed Sept. 14, 1972, Ser. No. 288,995

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 DA **12 Claims**



1. In an analog-to-digital converter system including an electromagnetic transducer having first and second reference windings, a voltage generator for providing stepped voltages to said first and second reference windings, said voltages having fundamental sinusoidal frequency components in phase quadrature with respect to each other and low harmonic content, comprising

an impedance element having first and second ends and having at least first and second groups of spaced taps thereon,

first switching means connected to said impedance element for alternately connecting reference voltages of opposite

polarity and constant value across said first and second groups of spaced taps, said taps being located on said impedance element to provide a voltage at each tap within a group which is a sinusoidal function of said location with respect to a tap maintained at a fixed potential, said first switching means further comprising an input terminal and first, second, third and fourth output terminals,

a clock generator for generating pulses,

a counter having an input coupled to said clock generator and a first output coupled to said first switching means, said counter resetting after receiving a predetermined number of pulses from said clock generator,

a decoder having an input coupled to a second output of said counter and a plurality of output terminals, each of said output terminals being coupled to the control terminals of a corresponding tap switch in said first and second groups, said decoder energizing sequentially said tap switches in accordance with pulses received by said counter means from said clock generator,

said first switching means further comprising a first multivibrator having an input coupled to the input terminal of said first switching means and a pair of outputs coupled to said first and second output terminals of said first switching means, said first multivibrator receiving a pulse each time said counter resets and reversing the states of the voltages at its first and second outputs, a second multivibrator having an input coupled to an output of said first multivibrator and a pair of outputs, said second multivibrator reversing the states of the voltages at its outputs for every second pulse received by said first multivibrator, first and second switching elements each having an input coupled to a corresponding output of said second multivibrator and an output coupled to said third and fourth output terminals of said first switching means and to a corresponding end of said impedance element, said first and second switching elements being driven alternately into conduction each time the output of said second multivibrator changes states,

second switching means connected to said impedance element and having first and second output terminals, said second switching means coupling sequentially and selectively the taps in each of said first and second groups respectively to said first and second output terminals to provide stepped output voltages thereat, said voltages having fundamental sinusoidal components in phase quadrature with each other, said second switching means including first and second groups of said tap switches, each tap switch having a first terminal, a second terminal and a control terminal, the first terminal of each of the switches in said first and second groups being coupled to a corresponding tap in said first and second groups of spaced taps respectively; and a switching circuit having a first input terminal coupled to the second terminals of said first group of tap switches and a second input terminal coupled to the second terminals of said second group of tap switches, said switching circuit further comprising third and fourth input terminals coupled to the first and second output terminals of said first switching means, first, second, third, fourth, fifth and sixth switches, each of said switches having first, second and control electrodes, the control electrodes of said first, third and fifth switches being coupled to the third input terminal of said switching circuit and said second, fourth and sixth switches being coupled to the fourth input terminal of said switching circuit, means coupling the second and first electrodes of said first and second switches respectively to the second input terminal of said switching circuit and means coupling the second and first electrodes of said third and fourth switches respectively to the first input terminal of said switching circuit, first, second and third operational amplifiers, each of said amplifiers having first and second input terminals and an output terminal; the first input terminal of said first amplifier being coupled to the first electrode of said first switch and the second electrode of said fourth switch, the second input terminal and the output terminal of said first amplifier being coupled together; the first input terminal of said second amplifier being coupled to the second electrode of said fifth switch and the first electrode of said sixth switch, the second input terminal of said second amplifier being coupled to the first electrode of said fifth switch, the second input and output terminals of said third amplifier and the output terminal of said second amplifier; and the first input terminal of said third amplifier being coupled to the second electrode of said second switch and the first electrode of said third switch, the second electrode of said sixth switch being coupled to a reference point, means coupling the outputs of said first and second amplifiers to the second and first output terminals respectively of said second switching means, and

means coupling the first and second output terminals of said second switching means to the first and second input windings of said transducer respectively.

3,849,775

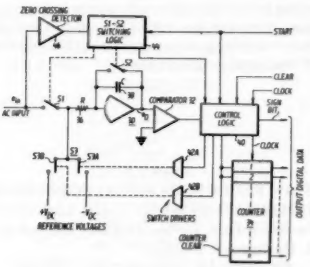
AC ANALOG TO DIGITAL CONVERTER

James E. Buchanan, Bowie, and Joel E. Brown, Baltimore, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 24, 1972, Ser. No. 300,027

Int. Cl. H03k *13/20*

U.S. Cl. 340—347 N T **2 Claims**



1. An AC analog to digital converter for converting input data comprising an AC analog voltage to a digital number proportional to the amplitude of the AC analog voltage, comprising:

zero crossing detector means producing an output in response to each zero crossing of the AC analog voltage,

integrating means,

input switching means and clearing switching means associated with said integrator,

switching logic means receiving the outputs of said detector means and responsive to a first zero crossing detector output to produce an output for closing said input switching means for supply of the AC analog voltage to said integrating means and to a next successive detector output to produce an output for opening said input switching means, defining there between a data integrating interval, comparator means responsive to the integrated output voltage of said integrating means to indicate the sign and amplitude of the integrated output voltage of the integrating means,

control logic responsive to the output of said switching logic means produced in response to the said next successive detector output concluding the data integration interval, to initiate a reference integration interval, said control logic responding to the sign indication of said comparator means for supply of a DC reference voltage to said inte-

grating means of predetermined amplitude and of opposite polarity to the sign indication,

a counter,

said control logic gating clock pulses of a predetermined repetition rate to said counter during the reference integration interval and responding to the zero voltage indication output of said comparator for concluding the reference integration interval and terminating the gating of further clock pulses to said counter and the supply of the DC reference voltage to said integrating means, the count attained by said counting means during the reference integration interval comprising a digital number proportional to the amplitude of the AC analog voltage for the half-cyle thereof integrated during the data integration interval, and wherein

said reference voltages comprise DC compensated reference voltages of equal amplitude and opposite polarity produced from an AC reference voltage by a compensating circuit comprising:

further integrating means,

further input switching means operated by said switching logic to be closed for the duration of the data integration interval for supply of the AC reference voltage to said further integrating means, and to be open for the reference voltage integrating interval, and

holding switch means connected between the input of said further integrating means and ground and normally in an open position and closed by said logic switching means to maintain the DC integrated voltage output of said further integrating means for the reference integration interval of said integrating means of said converter, thereby to provide a DC reference voltage output compensated for variations in the AC reference supply voltage, and

an inverter receiving the output of said further integrating means for supplying the compensated DC reference voltage of the opposite polarity.

3,849,776

VIDEO TAPE RECORDERS FOR RECORDING PLURAL RADAR INFORMATION SOURCES ON A SINGLE TRACK

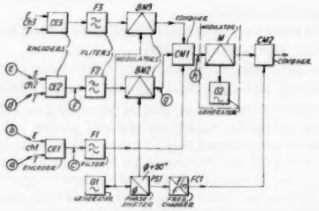
Richard Swynford-Lain, Earley, England, assignor to Ferranti Limited, Hollinwood, England

Filed Oct. 18, 1972, Ser. No. 298,516

Claims priority, application Great Britain, Oct. 20, 1971, 48701/74

Int. Cl. G01s 9/00; G11b 5/00

U.S. Cl. 343—5 PC **20 Claims**



1. A video tape recorder for recording and replaying video display information originating simultaneously from up to three sources, and represented by separate video display information signals which includes record signal processing apparatus comprising first carrier generating means operable to generate two carrier signals of the same frequency but in quadrature with one another, modulating means operable to modulate the two carrier signals with first and second video display information signals respectively, and combining means operable to combine the two modulated signals with the third video display information signal to form a single video track of a composite signal; apparatus for causing the composite signal to be recorded on to or retrieved from a magnetic recording medium; and playback signal processing apparatus comprising signal separating means operable to separate the said third video display information signal in said composite signal from the two modulated signals, second carrier generating means operable to generate two carrier signals of the same frequency as the carrier signals generated by the first carrier generating means but in quadrature with one another, and demodulating means operable to demodulate the two modulated signals to derive the first and second video display information signals.

3,849,777

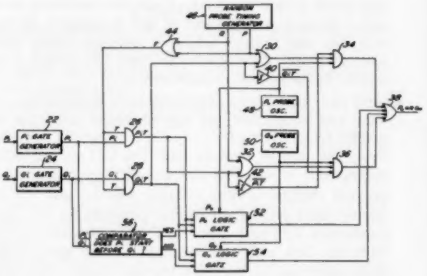
INTERROGATOR-TRANSPONDER FRUIT REDUCER

Oscar Shames, Philadelphia; James L. Hinds, Telford; Gerald J. Palatucci, Warrington, and Michael Raditz, Cornwells Heights, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 26, 1973, Ser. No. 409,837

Int. Cl. G01s 9/56

U.S. Cl. 343—6.5 LC **7 Claims**



1. In a prober-remitter collision avoidance system employing two distinct probe signal types, P_o and Q_o, a probe selector comprising:

an output terminal;

first means for detecting the presence of a signal P_i and for producing a signal P_i;

second means for detecting the presence of a signal Q_i and for producing a signal Q_i;

third means connected to the output of said first means for providing a Q_o-probe signal to said output terminal upon receipt of said signal P_i;

fourth means connected to the output of said second means for providing a P_o probe signal to said output terminal upon receipt of said signal Q_i;

fifth means connected to the output of said first means and to the output of said second means for providing to said output terminal a probe signal opposite in type to the last received said P_i or Q_i signals when said signals are detected concomitantly by said first and second means; and

sixth means connected to the output of said first means and to the output of said second means and adapted to provide a randomly selected P_o- or Q_o-probe signal to said

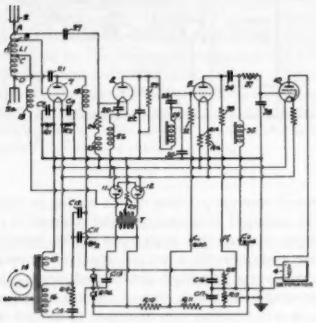
output terminal when said first and second means fail to detect said P_1 or Q_1 signals within a predetermined time interval.

3,849,778

PULSE DOPPLER FUSE

Paul Wilson Redcay, Washington, D.C., assignor to The United States of America as Represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 8, 1950, Ser. No. 148,444
Int. Cl. F42c *13/04*
U.S. Cl. 343—7 PF 2 Claims



2. An ordnance fuse comprising a pulsed radio frequency oscillator, pulsing means for said oscillator, said oscillator including an electron tube having grid, plate and cathode elements, a diode for detecting reflections of radio frequency energy generated by said oscillator and radiated by radiation means coupled thereto, said radiation means common to the oscillator and diode, a frequency selective amplifier coupled to said diode and responsive to the Doppler frequency due to the relative movement of said fuse and a reflective surface, detonator triggering means coupled to the output of said amplifier, and wind driven alternating current generating means for supplying power to the fuse, said pulsing means comprising a transformer coupled to the high voltage output of said generating means, rectifying means connected across the output terminals of said transformer, said grid connected to the transformer at a point intermediate its output terminals whereby a variable bias is applied to said grid and said oscillator periodically pulsed in accordance with the frequency of said generating means.

3,849,779

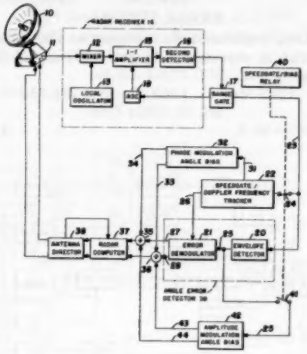
MULTIPLE TARGET INDICATOR AND DISCRIMINATOR

William C. Boyd, Stow, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 28, 1973, Ser. No. 345,603
Int. Cl. G01s *9/02*
U.S. Cl. 343—7.4 10 Claims

1. In a radar of the sequential lobe type wherein a radar signal is transmitted and received by antenna means, and the received radar signal is a composite signal containing a phase modulated signal component caused by multiple targets occurring within one radar beamwidth, a multiple target indicator comprising,

detection means connected to said composite signal for producing an output signal derived from said phase modulated signal component, and



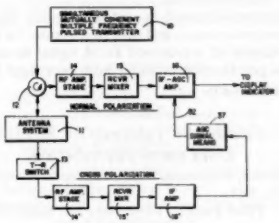
indicating means connected to receive said detecting means output signal and producing a signal indicative of the presence of muultiple targets.

3,849,780

DUAL POLARIZATION RESPONSIVE RADAR HAVING IMPROVED RESPONSE TO SMALL TARGETS

Forest J. Dynan, Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 12, 1969, Ser. No. 808,043
Int. Cl. G01s *7/34*
U.S. Cl. 343—7 A 10 Claims



1. In a pulsed energy ranging system, means for enhancing the detection of discrete targets against an associated clutter background, comprising

transmitting means for simultaneous transmission of a plurality of carrier frequencies having a common single plane of polarization;

receiving means having a first and second polarization-sensitive channel responsive to a respective first and second mutually orthogonally polarized component of received echoes of said transmission, the polarization of one of which polarized components corresponding to the transmitted polarization; and

received signal processing means responsive to both said channels of said receiving means for distinguishing discrete targets from clutter while allowing a suppressed clutter display for ground map orientation of such targets, said received signal processing means comprising

automatic gain control means having a first input responsively coupled to an output of that polarization-sensitive channel sensitive to said transmitted polarization and further having a gain control input responsively coupled to an output of the other of said polar-

ization sensitive channels for varying the gain of said gain control means substantially inversely with variations in the output of said other polarization-sensitive channel.

3,849,781

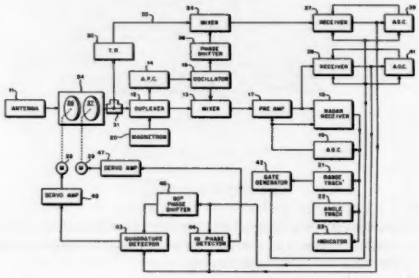
RADAR SYSTEM

Eldon L. Ort, Doylestown, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 31, 1963, Ser. No. 285,554

Int. Cl. G01s *7/36*

U.S. Cl. 343—18 E **12 Claims**



1. A radar system capable of effective operation in an ECM environment, comprising in combination:

antenna means,

radar receiver means,

wave guide means connecting said antenna means to said radar receiver means,

first means included in said wave guide blocking signals of a predetermined polarization from reception by said radar receiver means,

second means disposed in said wave guide means between said antenna means and said first means for changing the polarization of a received ECM signal to said predetermined polarization blocked from reception by said radar receiver means.

3,849,782

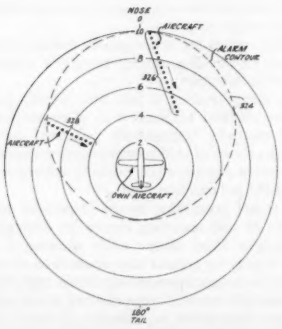
COLLISION PREVENTION

Donald S. Bond, Princeton, N.J., assignor to RCA Corporation, New york, N.Y.

Filed June 5, 1957, Ser. No. 663,778

Int. Cl. G08g *5/04*

U.S. Cl. 343—112 CA **21 Claims**



17. In combination: means for giving an indication representative of the direction of an intruding craft from an observing craft; and means preventing the operation of said first named means as long as said direction is changing.

3,849,783

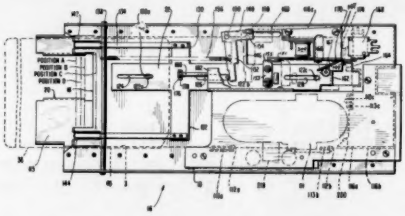
TIME RECORDER

Dominick Tringali, and John W. Dillard, both of Columbia, S.C., assignors to Universal Business Machines Incorporated, Columbia, S.C.

Division of Ser. No. 239,124, March 29, 1972, Pat. No. 3,793,641. This application July 16, 1973, Ser. No. 379,496

Int. Cl. G01d *15/28; G07c 1/18*

U.S. Cl. 346—134 **9 Claims**



1. In a record receiver printing device having an upper and a lower plate arranged in spaced parallel relation to one another to define a chute assembly, said plates being slotted adjacent one end thereof, a record receiver gripping and positioning apparatus mounted above said upper plate for reciprocatory movement with respect thereto, said apparatus terminating in a depending arm arranged to extend into the slots adjacent an end of said plates, a record receiver manually insertable into said chute assembly with an end thereof engaging said depending arm for initiating manual movement of said apparatus with respect to said chute assembly, and means actuated by the initial movement of said apparatus over and above said upper plate for automatically causing said apparatus to be moved with respect to said chute assembly.

3,849,784

APPARATUS FOR MONITORING TRAFFIC

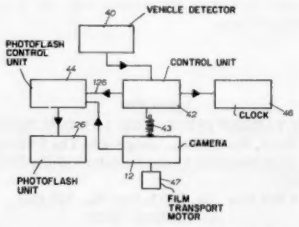
Jürgen Holzapfel, Neuss, Germany, assignor to Robot Foto und Electronic GmbH & Co. KG, Dusseldorf-Benrath, Germany

Filed Nov. 14, 1973, Ser. No. 415,508

Claims priority, application Germany, Nov. 25, 1972, 2257818

Int. Cl. G01d *1/12*

U.S. Cl. 346—107 VP **8 Claims**



1. In an apparatus for monitoring the traffic at a road intersection at which there is a control light having a "stop" period, which apparatus includes: a photographic camera actuated when a vehicle enters the intersection during said "stop" period, a time meter in the form of an electronic digital

counter which receives counting pulses at a given frequency, a register having a control input and connected said digital counter so that the small time units are transferred to said register when a control impulse is applied to said control input at the beginning of the "stop" period, and a time display device connected to said register to display the time information stored in said register, said camera taking a photograph of both said road intersection and said time display device, the improvement comprising:

an electronic photoflash device comprising an electronic flash tube having a triggering electrode, a storage capacitor connected across said electronic flash tube for supplying the electric power to said flash tube to cause it to emit light, power supply means connected to said capacitor to charge it to an operating voltage, a triggering transformer having a primary and a secondary winding, the secondary winding being connected to the triggering electrode, triggering circuit means including a triggering capacitor and a triggering switch connected to the primary winding for energizing the transformer to initiate the discharge of the flash tube when said switch is closed, charging means connected to the triggering capacitor for charging the capacitor, and anti-interference means connected to the triggering circuit means for lessening the pulse occurring when said switch is opened to thereby ameliorate the occurrence of false counts in the electronic digital counter due to said pulse.

3,849,785

PHOTOGRAPHIC CAMERA WITH PRESELECTABLE DIAPHRAGM APERTURE

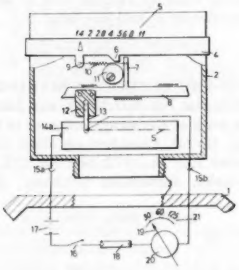
Heinz Schulze, Dresden, Germany, assignor to VEB PENTACON DRESDEN Kamera-und Kinowerke, Dresden, Germany

Filed Feb. 25, 1974, Ser. No. 445,483

Claims priority, application Germany, Apr. 11, 1973, WPG 03 b

Int. Cl. G03b *7/02, 7/20, 17/14*

U.S. Cl. 354—40 **2 Claims**



1. In a photographic camera comprising an objective lens having a preselectable aperture diaphragm, a diaphragm preselection setting device, an exposure measuring circuit including a moving coil, a photoelectric cell, a power source and a voltage adjustment device having a sliding contact, the provision of

a. an entrainment member on said preselection setting device effective to move said sliding contact, and

b. stop means for effecting arrest of said sliding contact in a position in which the electrical value corresponding to the photometric initial diaphragm is determined by the voltage adjustment device, the entrainment connection between the entrainment member and the sliding contact being nullified on arrest of said sliding contact.

3,849,786

LIGHT INTEGRATING TYPE LIGHT DETECTOR CIRCUIT WITH PHOTOVOLTAIC CELL

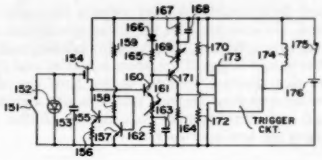
Yasuhiro Nanba, and Motonobu Matsuda, both of Osaka, Japan, assignors to Minolta Camera kabushiki Kaisha, Osaka-shi, Japan

Filed Dec. 8, 1972, Ser. No. 313,498

Claims priority, application Japan, Dec. 10, 1971, 46-99391; Dec. 11, 1971, 46-99861

Int. Cl. G03b *7/08*

U.S. Cl. 354—51 **29 Claims**



1. A light sensitive circuit comprising:

a. a photovoltaic cell;

b. a capacitor element;

c. switch means actuatable for initiating a variable time interval;

d. said photovoltaic cell, said capacitor element and said switch means being connected in a parallel circuit with each other, whereby upon opening of said switch means, said capacitor element is charged with a signal; and

e. circuit means responsive to the signal of said parallel circuit of a threshold level to provide an output signal after the timing interval, said threshold level being selected within a range of a signal charged on said capacitor element with a charging current substantially equal to a short circuit current of said photovoltaic cell, whereby said timing interval is inversely proportional to the intensity of light directed onto said photovoltaic cell.

3,849,787

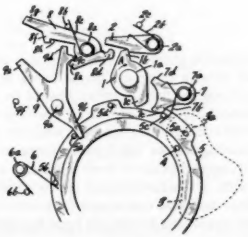
LENS SHUTTER WITH PRE-VIEW DEVICE FOR A PHOTOGRAPHIC CAMERA

Tadashi Nakagawa, Yotsukaido, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,154

Int. Cl. G03b *19/12*

U.S. Cl. 354—156 **4 Claims**



1. In a lens shutter, at least one shutter blade for opening and closing a lens aperture, a shutter blade operating member for operating said at least one shutter blade to an open posi-

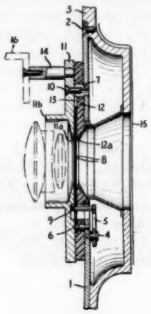
tion and a closed position opening and closing the lens aperture, a drive member for driving said operating member for opening and closing the lens aperture for taking photographic exposures, a lock member for releasably locking said drive member operable to release said drive member for taking of said exposures, a pre-view device coactive with said operating member for opening and closing the lens shutter with said operating member at will for viewing through said lens aperture the scene to be photographed comprising an actuating member operable from a rest position to a first position and back to said rest position for actuating said shutter blade operating member for respectively opening and closing said at least one blade to open and close the lens aperture independently of said drive member for pre-viewing the scene to be photographed, a release member for releasing said lock member for taking exposures and for releasably holding said actuating member in said first position when actuating said operating member to a position opening said at least one shutter blade and being operable to release said actuating member for allowing said operating member to close the shutter blade thereby closing the lens aperture.

3,849,788

SHUTTER ASSEMBLY FOR A CAMERA

Masuo Ogihara, and Masanori Watanabe, both of Chiba, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1973, Ser. No. 364,280
Claims priority, application Japan, May 26, 1972, 47-62161
Int. Cl. G03b 9/08
U.S. Cl. 354—226 **8 Claims**



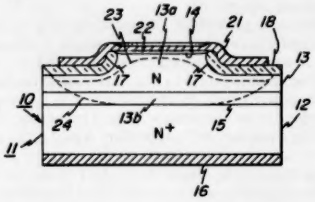
1. In a photographic shutter assembly for use with a camera: a support plate having opposed major faces and having an opening therethrough; a first member spaced from one major face of said support plate and having an opening therethrough defining a shutter aperture in alignment with the support plate opening; connecting means rigidly interconnecting said first member to said support plate to form therewith a unitary rigid construction with a predetermined space existing between said first member and said one major face; a second member disposed in said space and having an opening therethrough in alignment with both said other openings; means defining a compartment between said first and second members; a set of shutter blades housed within said compartment; and means on said support plate and said first member mounting said set of shutter blades for opening and closing movement to effect corresponding opening and closing of said shutter aperture.

3,849,789

SCHOTTKY BARRIER DIODES

Linus F. Cordes, and Marvin Garfinkel, both of Schenectady, N.Y., assignors to General Electric, Schenectady, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,800
Int. Cl. H01l 5/00
U.S. Cl. 357—15 **6 Claims**



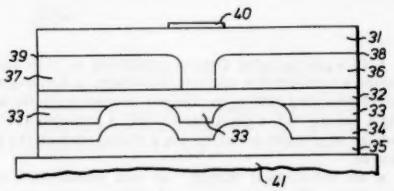
1. A Schottky barrier diode comprising
a layer of semiconductor material of one conductivity type having a pair of opposed faces,
a conductive member secured to one of said faces to form a Schottky barrier rectifying contact therewith,
a substrate member of semiconductor material of said one conductivity type and low resistivity in relation to said layer secured to the other face of said layer to form a non-rectifying contact therewith,
said layer being divided into a plurality of sublayers each of uniform net activator concentration, the net activator concentration of a sublayer being greater than the net activator concentration of a preceding sublayer starting from the sublayer adjacent said conductive member,
each of said sublayers extending beyond the peripheral portions of said Schottky barrier rectifying contact.
the net activator concentration and the thicknesses of said sublayers being set such that the value of reverse voltage applied between said conductive member and said substrate member at which depletion in said layer extends from said one face to said other face thereof produces a value of electric field at said one face which is equal to or less than the value of electric field at which avalanche breakdown occurs at said one face.

3,849,790

LASER AND METHOD OF MAKING SAME

Hartmut Gottsmann, Unterkirchberg, and Joachim Specovius, Brackwede, both of Germany, assignors to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Germany

Filed July 26, 1972, Ser. No. 275,191
Claims priority, application Germany, July 29, 1971, 2137892
Int. Cl. H01s 3/06, 3/18
U.S. Cl. 357—18 **16 Claims**



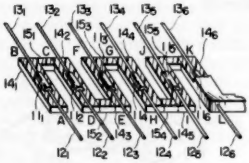
1. In a double heterostructure laser diode including a semiconductor body having a light emitting active layer, a highly doped first layer of a first conductivity type overlying one

major surface of said active layer, a second layer of said first conductivity type overlying said first layer, a third highly doped layer of the opposite conductivity type overlying the opposite major surface of said active layer and a fourth layer of said opposite conductivity type overlying said third layer, said first and third layers being formed of a crystal whose band spacing between the valance band and the conductive band is greater than that of the crystal which forms said active layer, the improvement comprising: first means extending into said semiconductor body from one major surface thereof through said second layer and at least into said first layer for confining the current flow through said first and second layers to a narrow path and for blocking current flow through laterally extending portions of said first and second layers; and further means for limiting the current flow in said fourth layer to a narrow path which is aligned with the said narrow path through said first and second layers, said further means comprise spaced apart semiconductor regions of said first conductivity type within said fourth layer at the interface of said third and fourth layers and forming respective barrier layers with said fourth layer, said narrow path in said fourth layer being between said barrier layers.

3,849,791
HIGH BREAK DOWN VOLTAGE-COMBINED SEMICONDUCTOR DEVICE SUITABLE FOR FABRICATION OF VOLTAGE MULTIPLIER RECTIFIER CIRCUIT

Yoichi Nakashima; Hisashi Sakamoto; Takeshi Ishizuka, and Kensuke Suzuki, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 6, 1973, Ser. No. 367,368
Claims priority, application Japan, June 12, 1972, 47-57733
Int. Cl. H011 *3/00, 5/00*
U.S. Cl. 357—72 **12 Claims**



1. A combined semiconductor device comprising a plurality of semiconductor elements each having a pair of lead wires, first insulating material members for molding each semiconductor element down to appropriate positions of the lead wires with the remaining portions of the lead wires being exposed which are to be connected with external electric circuits, and second insulating material members for connecting the adjacent first insulating material members in a bridged manner along a rectangular waveform line with interspaces therebetween, each of said interspaces being able to fix another electric circuit element therein which is connected with the lead wires.

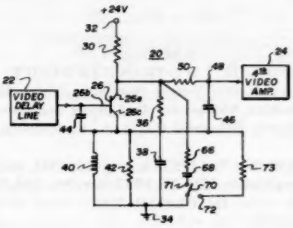
ERRATUM

For Class 358—27 see:
Patent No. 3,849,593

3,849,792
SIGNAL TRANSLATING CHANNEL WITH PRE-SHOOT AND OVER-SHOOT

Robert A. Holzrichter, Chicago, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Mar. 16, 1973, Ser. No. 342,315
Int. Cl. H04n *5/48*
U.S. Cl. 358—37 **11 Claims**



1. A signal translating channel for producing pre-shoot and over-shoot in an output waveform, comprising:

an active device having first, second and third electrodes;

input means coupling an input waveform to said first electrode for producing second and third waveforms at said second and third electrodes, respectively;

first differentiating means coupled to said second electrode for differentiating the second waVeform;

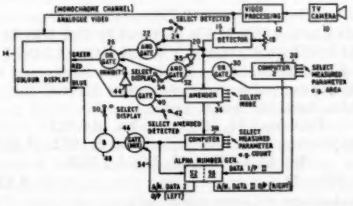
second differentiating means coupled to said first differentiating means for differentiating the differentiated second waveform to produce a doubly differentiated second waveform; and

combining means coupled to said second differentiating means and said third electrode for combining the doubly differentiated second waveform and the third waveform to produce pre-shoot and over-shoot in the output waveform.

3,849,793
IMAGE ANALYSIS SYSTEM

Roger John Herbert Ablett, Potton, England, assignor to Image Analysing Computers Limited, Milbourn, Royston, Hertfordshire, England

Filed Dec. 27, 1972, Ser. No. 318,713
Claims priority, application Great Britain, Dec. 31, 1971, 61036/71
Int. Cl. H04n *9/00*
U.S. Cl. 358—81 **18 Claims**



1. In a method of analyzing features in a field comprising the steps of scanning the field to produce a monochrome video signal relating thereto, detecting amplitude levels thereof which exceed a given reference voltage, generating constant amplitude pulses from the detected amplitude levels and deriving signals from the constant amplitude pulses, the improvement comprising the additional steps of:

displaying said monochrome signal on a colour television display monitor to produce a monochrome representation of the field, and,

displaying at least some of said signals derived from said constant amplitude pulses on said monitor in a distinctive colour simultaneously with said monochrome video signal whereby the display of these signals is in strong contrast to the monochrome representation of the remainder of the field.

3,849,794

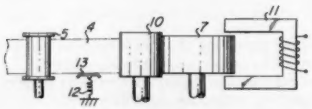
MAGNETIC TAPE TRANSFER DEVICE

Ichiro Arimura, Kyoto; Yutaka Higashida, Nishinomiya, and Kozo Kurashina, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Continuation of Ser. No. 175,228, Aug. 26, 1971, abandoned. This application May 29, 1973, Ser. No. 364,339

Int. Cl. G11b *5/86*

U.S. Cl. 360—17 **6 Claims**



1. In a magnetic tape transfer device in which there are provided a first supply reel around which a recorded original tape is wound, a second supply reel around which a non-recorded transfer tape is wound, a capstan to which the latest-wound portion of both the recorded original tape and non-recorded transfer tape are kept pressed, a take-up reel without any flange rotatably mounted on a rotary arm, means for energizing said rotary arm so that a side of said take-up reel contacts with said capstan, a guide roller with at least one flange provided between said supply reels and said take-up reel, a tape side control means elastically supported to be brought into contact with one side end of both tapes between said guide roller and said take-up reel and to be movable in the transverse direction of both tapes, and a magnetic field generating means for applying a magnetic field to both tapes wound on said take-up reel, both tapes being unwound from said supply reels and taken up on the take-up reel after being wound in a predetermined angle so that the magnetic surfaces of both tapes are brought into contact with each other by means of said guide roller.

3,849,795

VIDEO TAPE RECORDER IN WHICH THE DRUM IS ROTATED SYNCHRONOUSLY WITH SIGNALS ON TAPE

Minoru Koda; Tadao Shioyama, and Akio Nishiyama, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed May 31, 1973, Ser. No. 365,722

Claims priority, application Japan, June 5, 1972, 47-56357

Int. Cl. G11b *5/52, 21/02, 15/28*

U.S. Cl. 360—73 **5 Claims**

1. A video tape recorder comprising:

a cylindrical drum having at least one rotatable video head for scanning a tape wrapped around said drum;

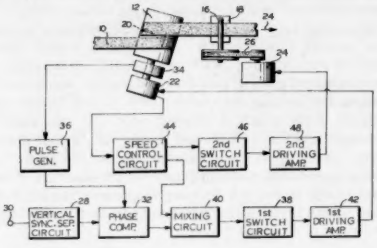
a drum motor coupled to said drum for rotating said drum and video head;

a capstan and a pressure roller for moving the tape in the longitudinal direction thereof in conjuction with each other;

a capstan motor coupled to said capstan for rotating said capstan;

detecting means coupled to said drum for detecting the rotational speed of said video head; and

switch means coupled to said detecting means and said capstan motor and adapted to be coupled to a source of electric power for supplying power to said capstan motor, the detecting means controlling said switch means to the off condition during the time when said rotational speed of said video head is no higher than a predetermined



speed, whereby no electric power for rotating said capstan motor is supplied through said switch means to said capstan motor, and the detecting means controlling the switch means to the off condition during the time when said rotational speed of said video head is higher than the predetermined speed, whereby electric power for rotating said capstan motor is supplied through said switch means to said capstan motor.

3,849,796

ROTARY HEAD MAGNETIC RECORDING AND REPRODUCING APPARATUS

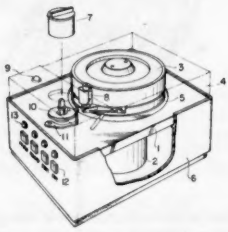
Shoji Omiya, Shijonawate; Yoshiaki Hayashi, Takatsuki, and Akio Kuki, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed Feb. 20, 1973, Ser. No. 333,481

Claims priority, application Japan, Feb. 21, 1972, 47-18172

Int. Cl. G11b *5/52, 5/60, 23/04*

U.S. Cl. 360—85 **6 Claims**



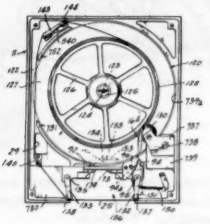
1. A rotary head magnetic recording and reproducing apparatus comprising: a rotating drum having at least one magnetic head mounted about an outer surface of said rotating drum; drum driving means for operating said rotating drum at a high speed; a tape cartridge containing a reel of magnetic tape in such a manner that said magnetic tape can be taken in and out of said cartridge, said reel of magnetic tape having a first engaging means at the beginning thereof, the length of said magnetic tape being sufficient to substantially make a single winding around the outer surface of said rotating drum, the width of said rotary drum being greater than that of said magnetic tape; cartridge holding means arranged adjacent to said rotating drum for removably supporting said cartridge; a tape holding post having an engaging pawl for engaging said first engaging means of said magnetic tape in said cartridge mounted on said cartridge holding means; and tape holding

post driving means for reversibly moving said tape holding post along the outer surface of said rotating drum, whereby signals are recorded on or reproduced from said magnetic tape wound around the outer surface of said rotating drum by said tape holding post while producing a layer of air between said magnetic tape and said rotating drum.

3,849,797
VIDEO TRANSDUCER SYSTEM AND CARTRIDGE THEREFOR

Marvin Camras, Glencoe, Ill., assignor to ITT Research Institute, Chicago, Ill.

Filed Aug. 21, 1972, Ser. No. 282,275
Int. Cl. G11b *15/22, 23/04, 15/29*
U.S. Cl. 360—93 **3 Claims**



1. In a transducer system including a capstan for driving engagement with a record tape in an operating mode,

said capstan having a flywheel rotatable therewith, capstan pressure roll means shiftable from a retracted position to an operating position to engage the record tape with the capstan in the operating mode, a brake for the flywheel disposed adjacent the flywheel and actuable into braking relation to said flywheel and thus to a capstan retarding condition for retarding rotation of the capstan, and a brake control coupled with said brake and operable contemporaneously with retraction of said pressure roll means from the operating position to actuate said brake to its capstan retarding condition, a driving motor for said capstan having a rotor and having a motor shaft secured with said rotor, said motor being operable to drive said capstan at a rotational speed corresponding to a record tape speed of at least about 60 inches per second during said operating mode,

said flywheel being directly on said motor shaft and having its outer peripheral surface coaxial with the axis of said motor shaft, said capstan being directly adjacent said flywheel along the length of said motor shaft without any intervening drive element, said brake for said flywheel comprising a brake shoe physically movable toward and away from said outer peripheral surface of said flywheel, and said brake control comprising a spring operable to press said brake shoe into direct frictional contact with said outer peripheral surface of said flywheel in the capstan retarding condition of said brake.

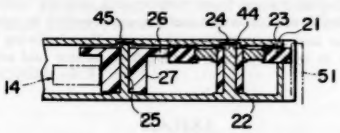
3,849,798
CARTRIDGE ADAPTER

Yoshio Ono, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 6, 1972, Ser. No. 295,644
Claims priority, application Japan, Oct. 8, 1971, 46-92732
Int. Cl. G11b *31/00*
U.S. Cl. 360—94 **5 Claims**

1. In a cartridge adapter having external dimensions and configuration of a large-size cartridge and mounting internally a small-size tape cartridge, and further having a pair of side by side idlers for transmitting by peripheral, frictional contact, torque from the capstan external of the cartridge adapter to the tape within the small-sized tape cartridge, the improvement wherein:

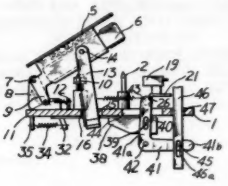
at least said idler contacting said capstan is mounted on a resilient, flexible shaft and said idlers are positioned relative to each other such that when the adapter is in use, said capstan presses on said adjacent idler to flex its shaft and to move that idler into firm contact with said tape contacting said idler, and when said adapter is not in use and contact with said capstan ceases, there is no more than bare contact between said idlers, and said flexible shaft and one face of the adapter are molded integrally.



3,849,799
MAGNETIC RECORDING AND REPRODUCING APPARATUS

Niro Nakamichi, Tokyo, Japan, assignor to Nakamichi Research Incorporated, Kodaira City, Tokyo, Japan

Filed June 28, 1972, Ser. No. 267,180
Claims priority, application Japan, June 30, 1971, 46-48325
Int. Cl. G11b *5/00*
U.S. Cl. 360—96 **5 Claims**



1. A magnetic recording and reproducing apparatus for use with a cassette containing a pair of reels between which a tape is wound, comprising a chassis having thereon a pair of reel shafts for driving the reels on the cassette, a capstan for feeding the tape in the cassette and a magnetic head for recording on the tape and reproducing therefrom, said magnetic head being movable between an advanced position in which the head contacts the tape in the cassette and a retracted position in which the head is separated from the cassette, means for moving the head from the retracted position to the advanced position, a cassette receiving case pivotally movable on the chassis, said cassette receiving case having a non-operative position in which the cassette can be inserted into and withdrawn from the cassette receiving case and an operative position in which the cassette cooperates with the magnetic head and the capstan on the chassis to effect recording and reproducing, said cassette also including walls defining locating holes through which extend corresponding locating pins on the chassis for positively holding the cassette in the operative position, means for moving the cassette receiving case from the non-operative position to the operative position, means for locking the cassette receiving case in the operative position, and means for resiliently pushing the cassette so that the locating pins on the chassis bear against the walls defining the

locating holes in the cassette to hold the cassette in position when the cassette receiving case is in the operative position, characterized by further comprising a cassette biasing means in said cassette receiving case cooperative with said locating pins for opposing movement of said cassette upon engagement of said cassette with said locating pins, and for allowing said cassette receiving case to move relative to said cassette after such engagement, said means for resiliently pushing said cassette being restrained from pushing said cassette until such movement of said cassette receiving case relative to said cassette after said engagement, said cassette thereby being freely movable in said cassette receiving case before said engagement.

3,849,800

MAGNETIC DISC APPARATUS

David E. Cuzner, Romsey; Charles O. R. Dodman, Basingstoke; John S. Heath, and Leonard J. Rigbey, both of Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 2, 1972, Ser. No. 231,320

Int. Cl. G11b *17/00*

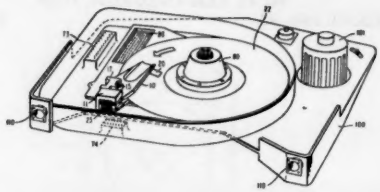
U.S. Cl. 360—97 **18 Claims**

1. A random access disc memory system comprising:

a plurality of interchangeable disc modules, each said module being characterized by

an enclosing means enclosing:

at least one magnetic disc rotatably mounted, at least one magnetic head associated with each side of each of said discs, an arm for carrying at least one of said magnetic heads, mounting means for supporting said arm for planar angular movement about a fixed axis where said fixed axis is at the center of gravity of said arm, and a motor connected to said arm, said motor dedicated solely for simultaneously selectively positioning one or more of said magnetic heads to any one of a plurality of concentric tracks located on said rotatable magnetic discs, said motor comprising a hollow coil carried by said arm and located so as to perform a translation movement along a curved path causing said arm to perform angular movement and a stator having magnetic pole pieces defining a magnetic flux gap therebetween and with said coil performs said translation movement, at least one of said pole pieces extending within the coil and at least one of said pole pieces extending outside the coil, so as that when current passes through said coil, magnetic flux crossing said gap will link said coil causing said



coil to experience a force which causes said coil to perform said translational movement and move said arm angularly;

a housing unit for accepting any one of said disc modules, said housing unit comprising;

a first means mechanically connectable to said disc module for transmitting mechanical energy into said module only for rotating said discs within said module; and a second means electrically connectable to said disc module for controlling the operation of said motor with said module and for controlling the reading and writing of information on said discs by means of said heads.

DESIGNS

NOVEMBER 19, 1974

233,633
SUSPENSORY SUPPORT BRIEF
Eugene R. Burkard, 4536 W. Point Loma Blvd., San Diego, Calif. 92107
Continuation-in-part of abandoned design application Ser. No. 237,222, Mar. 27, 1972. This application Apr. 29, 1974, Ser. No. 464,744
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—10

233,634
HOSPITAL GOWN
Dana R. Snider, 241 E. Burrows, Tucson, Ariz. 85704
Filed May 24, 1973, Ser. No. 363,427
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—17

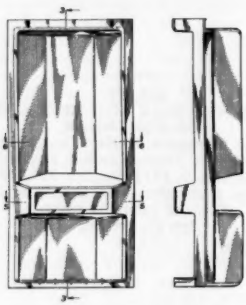
233,635
WIRE HELMET GUARD
Terry A. Litsinger, Sr., 905 Mae St., Kent, Ohio 44240
Filed Oct. 12, 1972, Ser. No. 296,767
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232

233,636
RUBBER BOOT
Otto Schneider, 3 Bassengvei, 1800 Askim, Norway
Filed Dec. 18, 1972, Ser. No. 315,889
Claims priority, application Norway June 16, 1972
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—272

233,637
COMBINED SOLE AND HEEL UNIT FOR FOOTWEAR
Aubrey Askew, Southport, England, assignor to Dunlop Limited, St. James, London, England
Filed Mar. 9, 1973, Ser. No. 339,845
Claims priority, application Great Britain Sept. 18, 1972
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—320

233,638
ARMCHAIR
Giovanni Offredi, Via Muratori 29, Milan, Italy
Filed Mar. 20, 1973, Ser. No. 343,007
Claims priority, application Italy Feb. 21, 1973
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

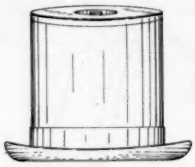
233,639
ACCESSORIES HOLDER FOR A SHOWER
Dwight N. Wooters, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed June 14, 1972, Ser. N. 262,546
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—91



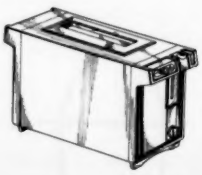
233,640
BREAD BASKET
Augusto Salviato, Corso Mario Abbiate 110, Vercelli, Italy
Filed June 11, 1973, Ser. No. 369,049
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—20

233,641
INSULATED JUG
David Edward Roche, Nashua, N.H., assignor to Family Products, Inc., Tyngsboro, Mass.
Filed Sept. 27, 1972, Ser. No. 292,778
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—77

233,642
FOOD CONTAINER
Ethel A. Arnold, Minneapolis, Minn., assignor to Ambassador Snack Products, Inc., Minneapolis, Minn.
Filed June 12, 1973, Ser. No. 369,163
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—76

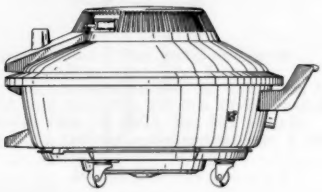


233,643
TOASTER
Masatoshi Naito, Ikeda, Fujio Sawamura, Toyonaka, Kunio Funatsu, Higashi, and Noriharu Furuyabu, Ashiya, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma City, Osaka, Japan
Original design application May 22, 1972, Ser. No. 255,950. Divided and this application Aug. 24, 1973, Ser. No. 391,311
Claims priority, application Japan Nov. 26, 1971
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—93

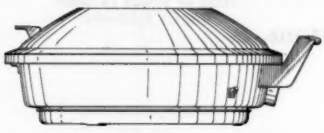


233,644
LETTUCE CORER OR THE LIKE
Edward N. Montesi, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed July 18, 1973, Ser. No. 380,315
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—147

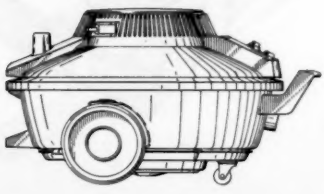
233,645
VACUUM CLEANER
Arne J. Diehl, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Sept. 17, 1973, Ser. No. 397,684
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—166



233,646
VACUUM CLEANER
Arne J. Diehl, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Sept. 17, 1973, Ser. No. 397,685
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—166

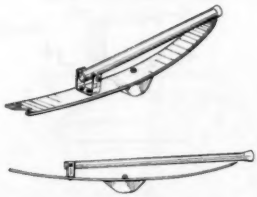


233,647
VACUUM CLEANER
Arne J. Diehl, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Sept. 17, 1973, Ser. No. 397,686
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—166

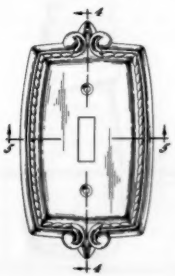


233,648
WRENCH HAND TOOL
Robert A. Louks, Gilman, Iowa 50106
Filed May 17, 1973, Ser. No. 361,222
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—22

233,649
TENT PEG EXTRACTOR OR THE LIKE
William A. Wood, Raleigh, N.C., assignor of a fractional part interest to Everett D. Lassiter, Raleigh, N.C.
Filed Aug. 31, 1972, Ser. No. 285,319
Term of patent 14 years
Int. Cl. D8—*05, 99*
U.S. Cl. D8—88

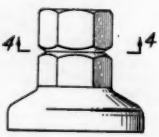


233,650
ESCUTCHEON PLATE
Raymond U. H. Tegner, Lodi, Wis. (% Amerock Corporation, 4000 Auburn St., Rockford, Ill. 61101)
Filed Nov. 10, 1972, Ser. No. 305,567
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—181



233,651
TACKLESS CARPET STRIPPING
Lawrence R. Sutton, Detroit, Carl P. Ranno, Grosse Pointe Park, and Kenneth E. Hewson, Farmington, Mich., assignors to Performance Industries, Inc., Pontiac, Mich.
Filed Mar. 5, 1973, Ser. No. 338,107
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—266

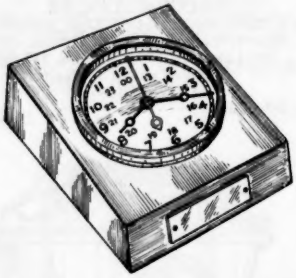
233,652
NUT
George S. Wing, 605 Paseo del Mar, Palos Verdes Estates, Calif. 90274
Filed Sept. 13, 1971, Ser. No. 180,242
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—273



233,653
COMBINED AEROSOL BOTTLE AND CAP THEREFOR
John Pardo, Yonkers, N.Y., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Aug. 22, 1972, Ser. No. 282,678
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—63

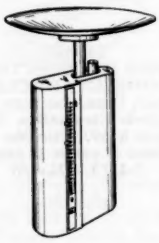
233,654
CONTAINER FOR BOOKLETS OR THE LIKE
John E. Lawlor, Tappan, N.Y., and John E. Sgomblck, Ramsey, N.J., assignors to Xerox Corporation, Stamford, Conn.
Filed Feb. 5, 1973, Ser. No. 329,799
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—202

233,655
DESK CLOCK
William Anthony Hilliard, Danvers, Mass., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Mar. 2, 1973, Ser. No. 337,403
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—25

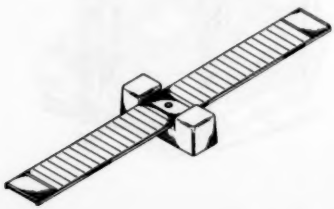


233,656
DESK CLOCK
William Anthony Hilliard, Danvers, Mass., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Mar. 2, 1973, Ser. No. 337,543
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—25

233,657
FOOD SCALE
Marco Zanuso, Milan, Italy, assignor to Terraillon, Annemasse, France
Original design application Feb. 28, 1972, Ser. No. 230,174, now Patent No. 231,016. Divided and this application June 18, 1973, Ser. No. 371,144
Claims priority, application Switzerland Sept. 1, 1971
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—89

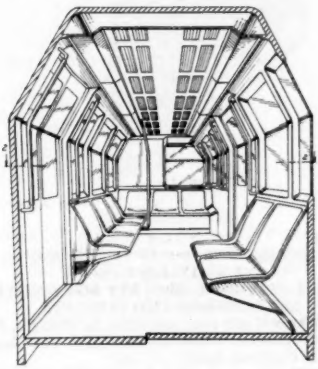


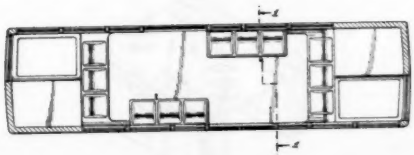
233,658
BALANCE SCALE
Philip J. Schroeder, Wellesley, Mass., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 26, 1973, Ser. No. 326,630
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—90



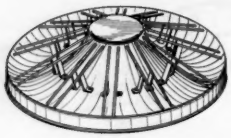
233,659
BALANCE SCALE FOR TEACHING
Alan Dawn, Fareham, England, assignor to E. S. Perry Limited
Continuation-in-part of abandoned design application Ser. No. 212,859, Dec. 27, 1971. This application June 15, 1973, Ser. No. 370,344
Claims priority, application Great Britain June 28, 1971
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—90

233,660
BODY FOR RAILWAY CAR OR SIMILAR VEHICLE
Walter H. Gollwitzer, Birmingham, Mich., and William B. Shenk, Jr., Rodenkirchen, Cologne, Germany, assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 13, 1972, Ser. No. 234,452
Term of patent 14 years
Int. Cl. D12—*03*
U.S. Cl. D12—40

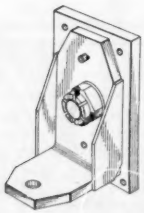




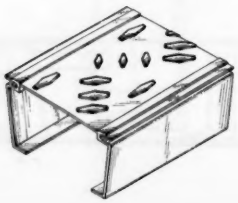
233,661
BICYCLE RACK
Ronald L. Ewers, Litchfield, Mich., assignor to Game Time, Inc., Litchfield, Mich.
Filed Dec. 12, 1973, Ser. No. 423,994
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D12—115



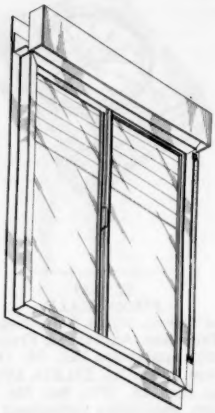
233,662
TRAILER HITCH
Norman C. Brown, 111 Bruning Ave., Rio Vista, Calif. 94571; Charles W. Brown, 1031 Johnfer Way, Sacramento, Calif. 95831; and Norman R. Brown, Orangevale, Calif. (1017 Charleston Circle, Roseville, Calif. 95678)
Filed Apr. 19, 1973, Ser. No. 352,620
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



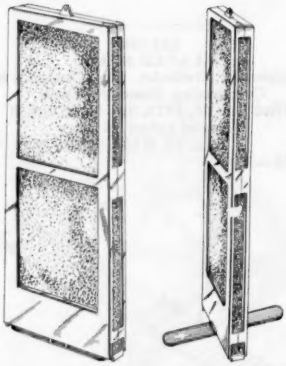
233,663
METAL FLOORING SECTION FOR ANIMAL ENCLOSURES AND THE LIKE
Grant T. Facer, Lafayette, and John A. Metzger, Fresno, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Sept. 14, 1972, Ser. No. 289,151
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 J



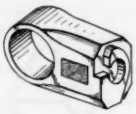
233,664
INTEGRAL SECURITY SHUTTER-WINDOW UNIT
Oscar P. Gilmore, Riverside, Calif., assignor to S. J. Collins, Riverside, Calif.
Filed Jan. 8, 1973, Ser. No. 321,718
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M



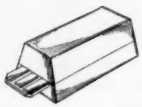
233,665
CONTAINER FOR INSECTICIDES OR SIMILAR ARTICLE
Gunther Neugebauer, Haan, Germany, assignor to American Home Products Corporation, New York, N.Y.
Filed Mar. 8, 1973, Ser. No. 339,268
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



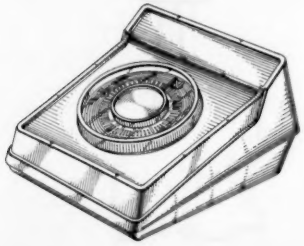
233,666
FISH HOOK BEND CORRECTOR
Benjamin P. Robinson, Springfield, N.J.
(1101-C Council Oak Drive, Sioux City, Iowa 51109)
Filed Mar. 16, 1973, Ser. No. 342,152
Term of patent 14 years
Int. Cl. D22—*05, 99*
U.S. Cl. D22—31



233,667
ELECTRICAL CONNECTOR
Wallace L. Knute, Del Mar, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed July 20, 1972, Ser. No. 273,391
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A

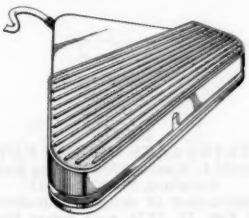


233,668
CONTROL UNIT FOR AN ANTENNA ROTATOR
Raymond Kaysen, Glenside, Pa., assignor to RCA Corporation
Filed July 2, 1973, Ser. No. 375,381
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 C



233,669
MICROPHONE
Gerald W. Plice, Morton Grove, Ill., assignor to Shure Brothers Incorporated
Filed Dec. 11, 1972, Ser. No. 313,999
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 J

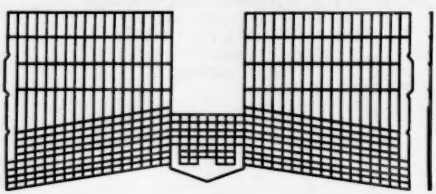
233,670
FOOT PEDAL FOR DICTATING MACHINE
James C. Sturrock, Atlanta, Ga., assignor to Robert N. Fink, Decatur, Ga.
Filed Mar. 7, 1974, Ser. No. 448,889
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 D



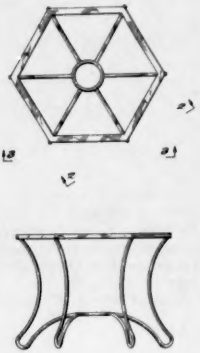
233,671
FENCE PICKET FOR LAWN EDGING OR SIMILAR ARTICLE
Kenneth F. Gay, Westerville, Ohio, assignor to Lawn Products, Inc., Columbus, Ohio
Filed July 25, 1972, Ser. No. 274,869
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D28—1 C

233,672
EMBLEM
Max R. Meehan, Buffalo Lake, Minn. 55314
Filed May 17, 1973, Ser. No. 361,306
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—11 R

233,673
POULTRY CAGE DIVIDER PANEL
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Continuation-in-part of design application Ser. No. 119,078, Feb. 25, 1971, now Patent No. 225,337. This application Dec. 4, 1972, Ser. No. 311,915
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



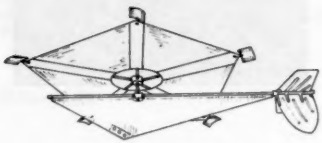
233,674
AQUARIUM STAND
Gerald R. Ritzow, 8844 Douglas Ave., Racine, Wis. 53402, and Roger C. Ritzow, S53 W23581 Big Bend Road, Waukesha, Wis. 53186
Filed Apr. 25, 1973, Ser. No. 354,188
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—12



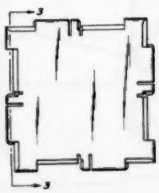
233,675
DOLL
Clair T. Buckner and Betty J. Buckner, both of 1528 Greenhills Road, Sacramento, Calif. 95825
Filed Aug. 22, 1973, Ser. No. 390,398
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 A

233,676
GOLF PUTTER
Armand W. Robustelli, 7 View St., Greenwich, Conn. 06830
Filed Mar. 21, 1973, Ser. No. 343,201
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

233,677
TOY HELICOPTER
Uwe C. Seefluth, Haus Kronos Seestrasse, 2409 Klingberg, Germany
Continuation-in-part of design application Ser. No. 25,028, Sept. 16, 1970. This application Jan. 31, 1972, Ser. No. 222,424
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 KK

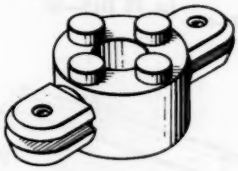


233,678
TOY CONSTRUCTION PIECE
Edward Henry Harvey, The Verne, Moor Common, Lane End, England
Filed Sept. 12, 1972, Ser. No. 288,324
Claims priority, application Great Britain Mar. 16, 1972
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



233,679
ROCKING HORSE
Lloyd A. Nielsen, 4441 South Ave. W., Missoula, Mont. 59801
Filed Feb. 16, 1973, Ser. No. 332,786
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AE

233,680
TOY ASSEMBLY ELEMENT
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego A.G., Zug, Switzerland
Filed Mar. 15, 1973, Ser. No. 341,497
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG

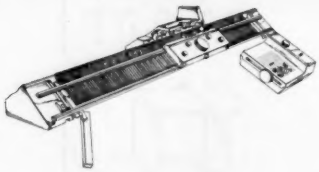


233,681
JEWELRY FINDING
Bernard Bernstein, 3224 Bronx Blvd., Bronx, N.Y. 10467
Filed Mar. 26, 1973, Ser. No. 345,013
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—19 R

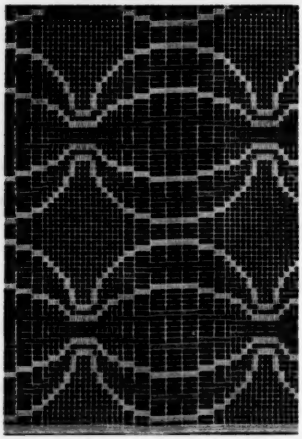
233,682
JEWELRY FINDING
Bernard Bernstein, 3224 Bronx Blvd., Bronx, N.Y. 10467
Filed Mar. 26, 1973, Ser. No. 345,014
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—19 R

233,683
SINGLE BED HAND OPERABLE KNITTING MACHINE
Wayne A. Current, Cranford, N.J., assignor to The Singer Company, New York, N.Y.
Filed May 3, 1973, Ser. No. 356,874
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D47—5

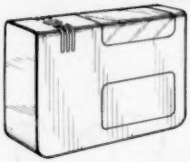
233,684
DOUBLE BED HAND OPERABLE KNITTING MACHINE
Wayne A. Current, Cranford, N.J., assignor to The Singer Company, New York, N.Y.
Filed May 3, 1973, Ser. No. 356,982
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D47—5



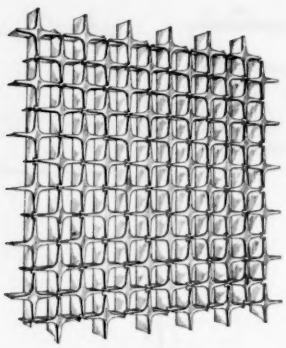
233,685
CURTAIN FABRIC
Peter E. Schroeder, Arni, Switzerland, assignor to Gardisette International AG, Zurich, Kirchenweg, Switzerland
Filed Mar. 26, 1973, Ser. No. 344,536
Claims priority, application Germany Oct. 7, 1972
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D47—6 E



233,686
TABLE LIGHTER
Franz Alban Stutzer, Offenbach am Main, Germany assignor to Rowenta-Werke, G.m.b.H.
Filed May 25, 1973, Ser. No. 363,913
Claims priority, application Germany Dec. 17, 1972
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

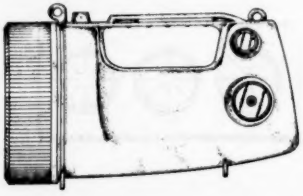


233,687
ILLUMINATOR GRID PANEL
Charles U. Deaton, Genessee Mountain, Golden, Colo. 80401
Filed Nov. 24, 1972, Ser. No. 308,995
Term of patent 14 years
Int. Cl. D26—*05;* D25—*02*
U.S. Cl. D48—16 A



233,688
TUBULAR HOOD FOR ATTACHMENT TO A FLASHLIGHT THEREBY ADAPTED FOR TRANSILLUMINATION
Antonino Araujo, Jr., Columbus, Ohio, assignor to Abbott Laboratories, North Chicago, Ill.
Filed Apr. 5, 1973, Ser. No. 348,439
Term of patent 14 years
Int. Cl. D26—*99, 02*
U.S. Cl. D48—20 H

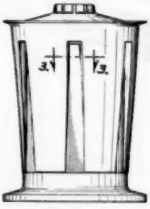
233,689
COMBINED RADIO RECEIVER AND FLASHLIGHT
Koji Mizuno, Kasuga, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 10, 1974, Ser. No. 432,335
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



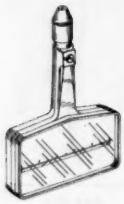
233,690
COMBINATION LIGHTER AND PEN
Mervyn Dudley Roddon, Great Bookham, England, assignor to Ronson Corporation, Woodbridge, N.J.
Filed Nov. 5, 1973, Ser. No. 412,644
Claims priority, application Great Britain May 4, 1973
Term of patent 14 years
Int. Cl. D27—*05;* D19—*06*
U.S. Cl. D48—27 A

233,691
OUTDOOR GROUND LEVEL LIGHTING FIXTURE
Hans Paul Ludwig Geisler, Norderstedt, Germany, assignor to Deutsche Texaco Aktiengesellschaft, Hamburg, West Germany
Filed Apr. 24, 1972, Ser. No. 247,253
Claims priority, application West Germany Jan. 12, 1972
Term of patent 14 years
Int. Cl. D26—*03, 05*
U.S. Cl. D48—31

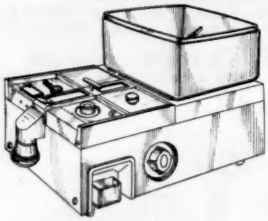
233,692
PORTABLE SPIN DRYER
Thomas R. Smith, Frank E. Ross, and William J. Swartz, Newton, Iowa, assignors to The Maytag Company, Newton, Iowa
Filed July 5, 1972, Ser. No. 269,281
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—1 A



233,693
COMPRESSION TESTER
Norman Holtzman, Los Angeles, Calif., assignor to Hanson Hawk, Inc., Chatsworth, Calif.
Filed Mar. 2, 1972, Ser. No. 231,451
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



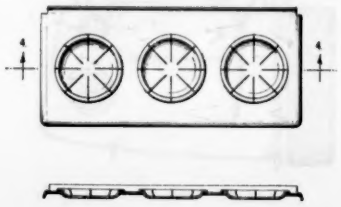
233,694
AUTOMATIC COIN COUNTING MACHINE
Masashi Tamura, Himeji, and Yoshio Akioka, Tokyo, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo-ken, Japan
Filed Apr. 21, 1972, Ser. No. 246,500
Claims priority, application Japan Oct. 25, 1971
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D52—4 R



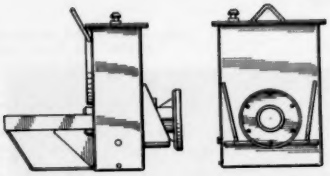
233,695
COMBINED TRY-MITRE SQUARE AND ANGLE FINDER
Donald L. Payne, Rockford, Ill., assignor to Pro Products, Incorporated, Rockford, Ill.
Filed Feb. 26, 1973, Ser. No. 335,892
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 A

233,696
POTTER'S WHEEL
Robert E. Piepenburg, 515 E. Windemere, Royal Oak, Mich. 48073
Filed Sept. 8, 1972, Ser. No. 287,505
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D55—1 R

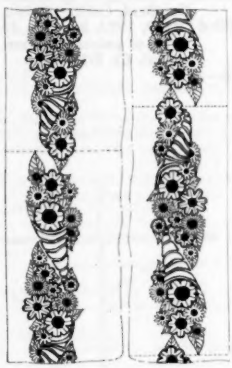
233,697
SHIELD FOR COFFEE MACHINE BURNER PLATES
James O. Tate, Birmingham, Ala., assignor to Tate, Inc., Birmingham, Ala.
Filed Jan. 8, 1973, Ser. No. 321,728
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D55—1 E



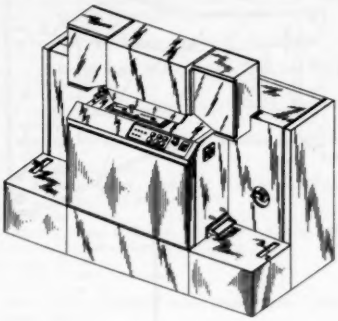
233,698
GEAR CASE FOR MAGNETIC SEPARATOR DRIVE
Karl J. Hnatko, Hibbing, Minn., assignor to Taconite Engineering & Manufacturing Co., Hibbing, Minn.
Filed Apr. 30, 1973, Ser. No. 355,514
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D55—1 G



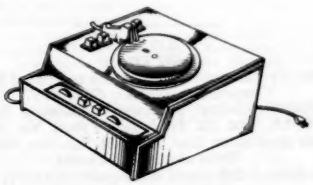
233,699
PAPER TOWELING
John S. Reece, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 23, 1973, Ser. No. 335,373
Term of patent 14 years
Int. Cl. D5—*03*
U.S. Cl. D59—2 A



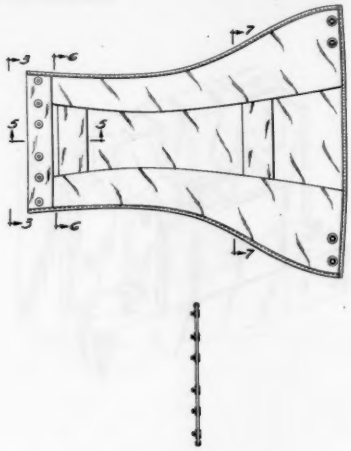
233,700
PHOTOGRAPHIC PRINTER
Andrew V. McClare, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 27, 1973, Ser. No. 355,255
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



233,701
PRINTER
Gary R. Bluem, Minneapolis, Minn., assignor to Kroy Industries, Inc., Stillwater, Minn.
Filed Jan. 30, 1973, Ser. No. 327,984
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R

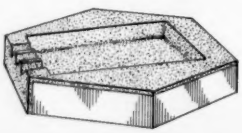


233,702
GARMENT FOR HOLDING A DIAPER
George F. Koury, Metairie, La., assignor to Pantasote Company, New York, N.Y.
Filed Mar. 10, 1972, Ser. No. 233,865
Term of patent 14 years
Int. Cl. D2—*01*; D24—*04*
U.S. Cl. D83—1 A

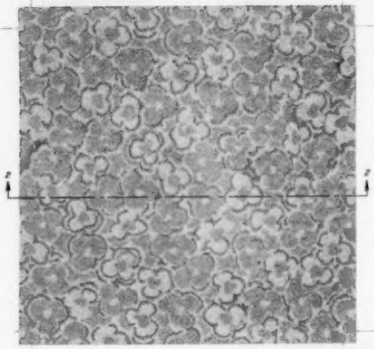


233,703
HAND HELD ELECTRIC MASSAGER
Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co.
Filed Dec. 15, 1972, Ser. No. 315,629
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D83—1 T

233,704
ASH TRAY
Ira Saltz, Greenlawn, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.
Continuation-in-part of design application Ser. No. 295,985, Sept. 28, 1972, now Patent No. 231,276.
This application Jan. 21, 1974, Ser. No. 435,207
Term of patent 14 years
The term of this patent subsequent to Apr. 9, 1988, has been disclaimed
Int. Cl. D27—*03*
U.S. Cl. D85—2 H



233,705
SOFT SURFACE FLOOR COVERING OR SIMILAR ARTICLE
Gerald E. White, Albertson, N.Y., assignor to Congoleum Industries, Inc., Kearny, N.J.
Filed Feb. 15, 1973, Ser. No. 332,779
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D92—4



233,706
STAND FOR REAL ESTATE SIGN
Thomas A. Battaglia, 43 Manor Road, Kentfield, Calif. 94904
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PATENTS WERE ISSUED ON THE 19TH DAY OF NOVEMBER, 1974

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Barzynski, Helmut; Jun, Mong-Jon; Saenger, Dietrich; and Volkert, Otto, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Lithographic printing plates and photoresists comprising a photosensitive polymer. 3,849,137, Cl. 96-67.000.

Basel, Horst Aebli; Fleck, Fritz; Littlewood, Peter Stuart; and Mercer, Alec Victor, to Sandoz Ltd. Pyrazoline compounds. 3,849,406, Cl. 260-239-700.

BASF Aktiengesellschaft: *See—*
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Batchelor, Donald G.: *See—*
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Bates, Charles Ross. Rinse method and machine. 3,848,290, Cl. 15-321.000.

Battaerd, Hendrik Adriaan Jacobus, to ICI Australia Limited and Commonwealth Scientific and Industrial Research Organization. Process of manufacturing polymer particles of irregular shape. 3,849,525, Cl. 264-6.000.

Battelle Memorial Institute: *See—*
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Bauer, Johann; and Popp, Walter, to Wacker-Chemie GmbH. Method for production of plasticized thermoplastic powder mixtures. 3,849,365, Cl. 260-34.200.

Baugh, Raymond Ernest; and Plaister, John Edward, to Taylor & Challen Limited. Feed mechanisms. 3,848,444, Cl. 72-10.000.

Bauman, Jack L.; and Erickson, Vedrick A. Seed dispenser for planters. 3,848,552, Cl. 111-77.000.

Baumbach, Bertram W.; and Nelson, Richard E., to Reliable Electric Company. Line protector for a communication circuit. 3,849,750, Cl. 337-32.000.

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Bear Brand Hosiery Co.: *See—*
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Beckwith, Merton M.; and Fong, Jaan-Jiue, to Conversion Chemical Corporation. Composition and method for stripping nickel, zinc and cadmium from substrates of iron and copper. 3,849,218, Cl. 156-18.000.

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Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar K:Son; and Lonnberg, Lars, to Kommanditbolaget United Stirling (Sweden) AB & Co. Seal for piston rod of Stirling engine. 3,848,877, Cl. 277-3.000.

Bennett, John E.; Burkhardt, James W.; and Koftfield, Richard E., to Diamond Shamrock Corporation. Bipolar hypochlorite cell. 3,849,281, Cl. 204-268.000.

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Berens, Darrell E. Dual purpose cabinet. 3,848,940, Cl. 312-135.000.

Bergersen, Earl O. Orthodontic appliance having cooperation detection capability. 3,848,335, Cl. 32-14.00b.

Bergman, Ernest R., to Copeland Corporation. Lubricating system for vertical machine elements. 3,848,702, Cl. 184-6.300.

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Bernstein, Philip; and Varker, Alan E., to ESB Incorporated. One-package moisture activatable polysulfide sealants. 3,849,386, Cl. 260-79.100.

Berthoud, Francois, to Ebauches S.A. Device for limiting the axial play of a rotatable element of a movement of timepiece or of a small mechanical apparatus. 3,849,011, Cl. 403-165.000.

Bertrand, Charles. Process for purifying fumes. 3,849,541, Cl. 423-242.000.

Beth-Con Realty, Inc.: *See*—
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Biarnais, Paul; Falize, Claude; and Sitaud, Gilbert, to Rhone-Progil. Purification of high boiling esters. 3,849,475, Cl. 260-475.00b.

Bibb, Everett I. Frame joint construction. 3,849,013, Cl. 403-347.000.

Bielfeldt, Friedrich Bernd; and Herbst, Richard, to Krauss-Maffei A.G. Distributor and nozzle assembly for injection-molding machines. 3,849,048, Cl. 425-247.000.

Bimba, Charles W. Method for assembling body and end sections for fluid power cylinder. 3,848,325, Cl. 29-511.000.

Binns, Kenneth John, to National Research Development Corporation. Permanent magnet rotor for alternating current generators and motors. 3,849,682, Cl. 310-156.000.

Bird, Marlin E. Cutting tool holding device. 3,848,865, Cl. 269-69.000.

Bird, Stanford W.; Wasserman, Jerome D.; and Hatley, Earl L., said Bird, Stanford W., assor. to Plastronics Corporation and said Wesserman and Hatley assors. to Consolidated Foods Corporation. Tear-away package. 3,848,795, Cl. 229-23.00r.

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Blagdon, Peter A.; Malzahn, Wayne R.; and Fujiwara, Huygene K., to Ralston Purina Company. Fortified snack process and product. 3,849,582, Cl. 426-152.000.

Blake, Frederick H. Fluidic constant pressure pump control. 3,849,027, Cl. 417-223.000.

Blake, Ralph Kingsley, to Du Pont de Nemours, E. I., and Company. Copper (I) salt-hydrophilic binder lithographic images. 3,849,134, Cl. 96-29.00l.

Blanford, Royal D. Wheelchair footplate cover cushion. 3,848,922, Cl. 297-219.000.

Blankenstein, Gunter: *See*—
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Blaskowski, Henry John; and Koucky, Robert Willis, to Combustion Engineering, Inc. Combined steam and gas turbine power plant having gasified coal fuel supply. 3,849,662, Cl. 290-2.000.

Blavier, Arthur Victor Joseph, to U.S. Philips Corporation. Arc welding device with consumable welding wire. 3,849,627, Cl. 219-131.00f.

Blewitt, Donald D.; and Shaw, Woodrow G., to Westinghouse Electric Corporation. Current limiting fuse. 3,849,754, Cl. 337-231.000.

Blewitt, Donald D.; and Shaw, Woodrow G., to Westinghouse Electric Corporation. Current limiting fuse with fuse element with a diamond shaped cutout. 3,849,755, Cl. 337-295.000.

Bljumberg, Anna Benedictovna: *See*—
Lykov, Mikhail Vasilievich; Rybalchenko, Gleb Fedorovich; Korotkov, Mikhail Alexeevich; Dobrovolsky, Evgeny Ivanovich; Rudenko, Inna Lukinichna; Avilov, Oleg Vladimirovich; and Bljumberg, Yakov Benedictovich, 3,849,233.

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Bloejack, James William, Jr.; Daniel, Truman Knox, Jr.; and Rolison, Darrell Edward, to Hercules Incorporated. Incineration process for disposal of waste propellant and explosives. 3,848,548, Cl. 110-7.00r.

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Percs, Edmund E.; Stocker, Kurt F.; Blomback, Birger; Blomback, Margareta; and Hessel, Birgit, 3,849,252.

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Bobkowicz, Emilian; and Bobkowicz, Andrew John. Aerodynamic spinning of composite yarn. 3,848,403, Cl. 57-34.0hs.

Bodine, Albert G. Sonic retorting technique for in situ mining of carbonaceous material. 3,848,672, Cl. 166-249.000.

Boehmke, Gunther, to Bayer Aktiengesellschaft. Polyester containing sulphonic acid groups. 3,849,377, Cl. 260-49.000.

Boehringer Mannheim GmbH: *See—*
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Boeing Company, The: *See—*
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Bogart, George A., 49% to Klein, Arthur J. Adjustable seat assembly. 3,848,845, Cl. 248-393.000.

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Bogusz, Frank J. Vehicle anti-theft device. 3,849,663, Cl. 307-10.0at.

Bohn, Gerhard: *See—*
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Bohrick Corporation, The: *See—*
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Bolan, Peter Samuel; Bryant, Aramis Duane; Drejza, John Edward; Holovka, Charles Stephen; and Weber, Ludwig Wilhelm, to International Business Machines Corporation. Print disc assembly for a printer. 3,848,722, Cl. 197-53.000.

Boliden Aktiebolag: *See—*
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Nilsson, Bruno Yngve, 3,849,722.

Bollen, Romain Henri: *See—*
Jeurissen, Lambert Gaston; Bollen, Romain Henri; Ghys, Theofiel Hubert; and Heylen, Renaat Frans, 3,849,658.

Bolliand, Robert; and Saligny, Claude, to Rhone-Poulenc Textile. Process of making a bulked padding web. 3,848,295, Cl. 19-65.00t.

Bom, Cornelis Johannes Gerardus: *See—*
Van Der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 3,848,677.

Bomoro Bocklenberg & Motte GmbH & Co., KG., Firma: *See—*
Wilfert, Karl; Gmeiner, Gunter; Grabner, Christian; and Nockemann, Ernst, 3,848,910.

Bond, Bonald S., to RCA Corporation. Collision prevention. 3,849,782, Cl. 343-112.0ca.

Bondarenko, Oleg Petrovich: *See—*
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Bookout, Floyd V., to Roch-Ola Manufacturing Corporation. Vending machine control circuit. 3,848,718, Cl. 194-1.00m.

Boone, Philip. Dispensing device. 3,848,822, Cl. 242-55.200.

Bordenca, Carl; and Derfer, John M., to SCM Corporation. Insecticidal compositions containing certain terpene ethers and pyrethrinoids. 3,849,571, Cl. 424-282.000.

Borg, Sven Christer; Hesson, Christer Ragnar; and Nilsson, Erik Henning, to Aktiebolaget Electrolux. Turning movement device for material handling apparatus. 3,848,753, Cl. 214-1.00b.

Borg-Warner Corporation: *See—*
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Born, Gunthard, to Messerschmitt-Bolkow-Blohm GmbH. Missile guidance system. 3,848,830, Cl. 244-3.160.

Bos, John R.: *See—*
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Bosch, Robert, G.m.b.H.: *See—*
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Boser, Ronald J. Sewing machine cutting device. 3,848,555, Cl. 112-252.000.

Boshagen, Horst; and Plempel, Manfred, to Bayer Aktiengesellschaft. Antimycotic benzisothiazoline derivatives. 3,849,568, Cl. 424-270.000.

Bosshard, Rene: *See—*
Gallay, Jean-Jacques; Bosshard, Rene; and Brenneisen, Paul, 3,849,431.

Bott, John A. Ski rack for motor vehicles. 3,848,785, Cl. 224-42.10f.

Boucher, Raymond W.; Boudreau, Robert; and Conti, John A., to Hedstrom Co. Saddle support system. 3,849,008, Cl. 403-104.000.

Boudakian, Max M., to Olin Corporation. Halogenation of diaminopyridines in acidic media. 3,849,429, Cl. 260-296.00r.

Boudreau, Robert: *See—*
Boucher, Raymond W.; Boudreau, Robert; and Conti, John A., 3,849,008.

Bougon, Pierre P. A.: *See—*
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Bourdin, Francois; Costantini, Michel; Jouffret, Michel; and Lartigau, Guy, to Rhone-Poulenc S.A. Hydroxylation of aromatic compounds. 3,849,502, Cl. 260-613.00d.

Bourdon, Julien Louis, to Gemmer France. Ball and socket joint for rack and pinion steering gear. 3,849,009, Cl. 403-133.000.

Bourdon, Richard P., to Pervel Industries, Inc. Flock-texturing method and product. 3,849,236, Cl. 161-64.000.

Bourgeois, Louis: *See—*
Degueldre, Louis; Killens, Charles; and Bourgeois, Louis, 3,849,282.

Bourne, Kenneth Hugh; Davies, Evan Ellis; and Pitkethly, Robert Chalmers, to British Petroleum Company Limited, The. Inhibiting the coke forming tendency of sorbents. 3,849,299, Cl. 208-310.000.

Bourret, Phillip L.; and Yin, Simon. Sound film synchronization system and method. 3,848,975, Cl. 352-5.000.

Boustany, Kamel, to Monsanto Company. 2,5-Piperazinediones. 3,849,418, Cl. 260-268.0dk.

Bovensiepen, Hans-Friedrich; and Caspers, Willi A., to Walters, Peter. Lapping or honing machine. 3,848,365, Cl. 51-111.00r.

Bowen, Dorsie Mae: *See—*
Conaway, Mildred; Thompson, Alligene; Bowen, Dorsie Mae; Brown, Danny; and McGarrah, Larry, 3,848,266.

Bowen, Mack D., to Georgia Tech Research Institute. Device for separating solid or liquid particles from a gaseous medium. 3,848,550, Cl. 110-18.00r.

Bowley, Wallace William, 1/2 to Ritchie, William B., Jr. Floating wave barrier. 3,848,419, Cl. 61-5.000.

Bowman, William G., to Petro-Tex Chemical Corporation. Isoprene prepared by the catalytic dehydration of 2-methyl-2,3-butanediol. 3,849,512, Cl. 260-681.000.

Boyd, William C., to United States of America, Navy. Multiple target indicator and discriminator. 3,849,779, Cl. 343-7.400.

Boyle, James H.; and Ingalls, John E., to Howmet Corporation. Precision casting with variable angled vanes. 3,848,654, Cl. 164-34.000.

BPB Industries Limited: *See—*
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Brackley, Graham: *See—*
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Bramble, Reba H.: *See—*
Spillane, Leo J.; Alexander, Stephen H.; and Bramble, Reba H., 3,849,229.

Branch, Geoffrey Hindle; and Hall, James Edward, to Pilkington Brothers Limited. Apparatus for transferring sheet material. 3,848,752, Cl. 214-1.0bs.

Brandt, Gerald B., to Westinghouse Electric Corporation. Integrated optical and/or gate. 3,849,740, Cl. 331-94.50c.

Brandt, Roger; and Piltzecker, John William, to American Can Company. Treatment of thermoplastic tubing. 3,849,286, Cl. 250-325.000.

Brandt, Roy Earl: *See—*
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Branson Instruments, Incorporated: *See—*
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Braslau, Norman; Cuomo, John J.; Harris, Erik P.; and Hovel, Harold J., to International Business Machines Corporation. Planar GaN electroluminescent device. 3,849,707, Cl. 357-17.000.

Brau, Maurice J.; and Reynolds, Richard A., to Texas Instruments, Incorporated. Enhancement of solid state recrystallization by induced nucleation. 3,849,205, Cl. 148-1.600.

Braun, Dieter; and Kortendieck, Wolfram, to Fortuna-Werke Maschinenfabrik AG. Machining tool. 3,848,285, Cl. 12-17.00r.

Breacain, Stephen J. Wheelchair anti-tip apparatus. 3,848,883, Cl. 280-5.320.

Breford, Glenn H., to Midway Industries, Inc. Fifth wheel trailer hitch. 3,848,894, Cl. 280-437.000.

Brenneisen, Paul: *See—*
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Brenner, Max. Isolation and purification of 3,4-dihydroxy phenylalanine. 3,849,488, Cl. 260-519.000.

Brenot, Claude; and Mollard, Gaston, to Thompson-CSF. Electrical coupling between elements in relative motion in respect of each other. 3,848,711, Cl. 191-12.00r.

Breslow, David S., to Hercules Incorporated. Process of bonding using epoxy-azido adhesives. 3,849,230, Cl. 156-330.000.

Bretche, Serge Norbert Emile. Multi-directional connecting element for panels. 3,848,388, Cl. 52-753.00d.

Brewer's Unlimited, Inc.: *See—*
Garza, Adan C.; and Bavisotto, Vincent S., 3,849,070.

Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, to Firestone Tire & Rubber Company, The. Bead mechanism. 3,849,231, Cl. 156-403.000.

Bridger, Robert F.; Heiba, El-Ahmadi I.; and Stournas, Stamoulis, to Mobil Oil Corporation. Organic compositions containing alkali metal arylcarbamates. 3,849,320, Cl. 252-33.600.

Bridgestone Tire Company Limited: *See—*
Ohkawa, Shunjiro; and Minagawa, Katsumo, 3,849,045.
Suzuki, Yasuo; Arimura, Iwao; and Arai, Tatsuo, 3,849,220.

Brieschke, Ewald; Kiefer, Esich; and Rolniczak, Heinz, to Kautex-Werke Reinold Hagen GmbH. Apparatus for the blow molding of hollow bodies made of thermoplastic synthetic material. 3,849,049, Cl. 425-326.00b.

Brinly-Hardy Co., Inc.: *See—*
Doering, Charles W., 3,849,043.

Brinning, Earl Edward: *See—*
Merlino, Eugene Louis, Jr.; Brinning, Earl Edward; and Naeyaert, Roger Stanley, 3,849,631.

Bristol-Meyer Company: *See—*
Thomas, Ralph H., 3,848,762.

British Petroleum Company Limited, The: *See—*
Bourne, Kenneth Hugh; Davies, Evan Ellis; and Pitkethly, Robert Chalmers, 3,849,299.

British Steel Corporation: *See—*
Hetherington, Matthew James; and Atkinston, Peter, 3,848,461.

Brock, Alan James; and Fulton, Douglas William, to S.A. Rubber Mills Pty. Ltd. Drip irrigation method. 3,849,639, Cl. 239-1.000.

Brody, Thomas P.: *See—*
Reitboech, Herbert J. P.; and Brody, Thomas P., 3,849,633.

Brokl, Milan: *See—*
Kerst, Al F.; Douros, John D., Jr.; and Brokl, Milan, 3,849,560.

Bromby, Norman Gunning. Reducing primary arylamine impurities in diarylamines. 3,849,495, Cl. 260-576.000.

Brooks, Frank W., to General Motors Corporation. Disc brake adjuster. 3,848,707, Cl. 188-71.900.

Brower, Stephen M.: *See—*
Deaton, David W.; Brower, Stephen M.; and Durham, Marhsall P., Jr., 3,848,628.

Brown Boveri & Company Limited: *See—*
Wagner, Karl Heinz; Muellerpoths, Reiner; and Hammel, Rudolf, 3,849,618.

Brown, Cicero C., to Well control apparatus. . 3,848,669, Cl. 166-73.000.

Brown, Danny: *See—*
Conaway, Mildred; Thompson, Alligene; Bowen, Dorsie Mae; Brown, Danny; and McGarrah, Larry, 3,848,266.

Brown, Joel E.: *See—*
Buchanan, James E.; and Brown, Joel E., 3,849,775.

Brown, John Robert, to Sunbeam Electric Limited. Kettles. 3,848,563, Cl. 116-118.00r.

Brown, Roland Clough. Visual-rotary-index card file. 3,848,941, Cl. 312-189.000.

Brownell, Lloyd E.: *See—*
Isaacson, Raymond E.; and Brownell, Lloyd E., 3,849,330.

Browning, Walter P.; and Dodge, William L. Wind turbine powered line suspended device. 3,848,835, Cl. 244-155.00r.

Brozek, Chester W.: *See—*
Hammer, Victor S.; and Brozek, Chester W., 3,848,905.

Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., to Sterigard Corporation. Mold for fabricating the housing of a dispensing valve for pressurized dispensers. 3,849,053, Cl. 425-438.000.

Bruggencate, Teunis Ten: *See—*
Frieling, Teunis; and Bruggencate, Teunis Ten, 3,849,227.

Brugger, Max: *See—*
Rittel, Werner; Brugger, Max; Kamber, Bruno; Riniker, Bernhard; Sieber, Peter; and Greven, Hendrik Marie, 3,849,388.

Brun, Roger, to U.S. Philips Corporation. Amplitude corrector for the chrominance component of a colour television signal. 3,849,593, Cl. 358-27.000.

Brunetti, Heimo; Schwarzenbach, Kurt; and Schmidt, Andreas, to Ciba-Geigy Corporation. Bis-salicycloyl-hydrazines. 3,849,492, Cl. 260-559.00h.

Bruno, Marshall J.; Jarrett, Noel; and Slaugenhaupt, Burl L., to Aluminum Company of America. Treatment of molten aluminum with an impeller. 3,849,119, Cl. 75-68.00r.

Brush, Robert W., to Bendix Corporation, The. Electrical connector insert retainer. 3,848,957, Cl. 339-176.00m.

Bryant, Aramis Duane: *See—*
Bolan, Peter Samuel; Bryant, Aramis Duane; Drejza, John Edward; Holovka, Charles Stephen; and Weber, Ludwig Wilhelm, 3,848,722.

Bryant, Richard C. Vehicle wiring adaptor. 3,849,664, Cl. 307-10.0ls.

Bryntse, Anders Ivar, to AB Bygg- och Transportekonomi (BT). Side loading fork unit for lift trucks. 3,848,754, Cl. 214-1.0bb.

Bub, Oskar: *See—*
Raschack, Manfred; and Bub, Oskar, 3,849,570.

Bublitz, Donald E.: *See—*
Kurihara, Norman H.; and Bublitz, Donald E., 3,849,415.

Bucalo, Louis, to Investors in Ventures, Inc. Valve with means for promoting ingrowth of tissue. 3,848,578, Cl. 128-1.00r.

Bucha, Harry C.; and Langsdorf, William P., Jr., to Du Pont de Nemours, E. I., and Company. Plant growth regulant method. 3,849,102, Cl. 71-76.000.

Buchanan, James E.; and Brown, Joel E., to Westinghouse Electric Corporation. AC analog to digital converter. 3,849,775, Cl. 340-347.0nt.

Buell, Kenneth Barclay, to Procter & Gamble Company, The. Tape fastening system for disposable diaper. 3,848,594, Cl. 128-284.000.

Bukalo, Alfred Iosifovich: *See—*
Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich, 3,849,584.

Bull, Brian S., to Coulter Electronics, Inc. Centrifuge apparatus for sedimentation study. 3,848,796, Cl. 233-25.000.

Bullard, Edward M.; and Schard, Malcolm P., to Mobil Oil Corporation. Resinous blend and oriented shrink film comprising polypropylene, polybutene and ethylene/butene copolymer. 3,849,520, Cl. 260-897.00a.

Bullinger, David John. Infantry attack vehicle with resilient armor. 3,848,508, Cl. 89-36.00h.

Bulova Watch Company, Inc.: *See—*
Fried, Henry B., 3,848,484.

Bundy, Francis P., to General Electric Company. Power generating plant with nuclear reactor/heat storage system combination. 3,848,416, Cl. 60-644.000.

Bundy, Gordon L., to Upjohn Company, The. Natural 15-methyl and ethyl- 15-epi-PGE_1. 3,849,487, Cl. 260-514.00d.

Bundy, Otto M.: *See—*
Seith, Robert E.; and Bundy, Otto M., 3,848,359.

Buntin, Robert R.; Keller, James P.; and Harding, John W., to Exxon Research and Engineering Company. Non-woven mats by melt blowing. 3,849,241, Cl. 161-169.000.

Burd, Samuel D., Jr.: *See—*
Wise, John J.; and Burd, Samuel D., Jr., 3,849,290.

Burger King Corporation: *See—*
Kubu, Stanley, 3,849,581.

Burke, Harold J., to General Motors Corporation. Shift lever bowl assembly. 3,848,478, Cl. 74-484.000.

Burkhardt, James W.: *See—*
Bennett, John E.; Burkhardt, James W.; and Koftfield, Richard E., 3,849,281.

Burlington Industries, Inc.: *See—*
London, Joe F., Jr., 3,848,404.

Burnett, Richard T., to Bendix Corporation, The. Application adjuster for disc brake. 3,848,705, Cl. 188-71.900.

Burnett, Roy Clair, to General Signal Corporation. Circuit integrity checking means for audio signal circuit. 3,849,772, Cl. 340-256.000.

Burns, Richard H.; Engelbrecht, Orest; and Welham, Brian H., to Bausch & Lomb Incorporated. Jewelled stabilized optic cell. 3,848,960, Cl. 350-16.000.

Burrough Wellcome Co.: *See—*
Mentha, John W.; Shaffner, Janice V.; and Cresswell, Ronald M., 3,849,416.

Burroughs Corporation: *See—*
Eisenberg, Mark F.; and Harmon, William J., Jr., 3,849,702.
Harvey, Edgar Lloyd; and Levine, Joel Martin, 3,849,694.
Kuchinsky, Saul; Shesser, Arthur B.; Somlyody, Arpad; and Fehnel, Richard B., 3,849,693.
Maloney, Thomas C.; and Miller, Donald E., 3,849,688.
Merlino, Eugene Louis, Jr.; Brinning, Earl Edward; and Naeyaert, Roger Stanley, 3,849,631.

Burroughs Wellcome & Co. (U.S.A.) Inc.: *See—*
Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,849,407.

Burroughs Wellcome Co.: *See—*
Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,849,470.

Burrows, W. Herbert. Zinc oxide recovery process. 3,849,121, Cl. 75-103.000.

Bush Boake Allen Limited: *See—*
Jaggers, Brian George; Ufton, Keith Frederick; and Wagner, Horst Richard, 3,849,326.

Busseret, Robert, to Rhone-Progil. Method for the continuous preparation of alkylperoxydicarbonates. 3,849,468, Cl. 260-463.000.

Bussienne, Christian; and Mary, Dominique. Electro-mechanical load transfer device for dynamic storage. 3,848,755, Cl. 214-16.40a.

Bustos, Rafael T.; and Leach, James A., to Leggett & Platt Incorporated. Telephone mounting structure. 3,849,608, Cl. 179-146.00r.

Buta, John R., to Paxon Machine Company. Continuous strip feeding self-alignment apparatus. 3,848,788, Cl. 226-19.000.

Butula, Ivan, to Rhein-Chemie Rheinau GmbH. 4,5,6,7-Tetrahydrobenzotriazoles and process of making the same. 3,849,433, Cl. 260-308.00b.

Butz Engineering Corporation: *See—*
Leibrick, Peter; and Terry, Nick H., 3,848,728.

Butz, Josef, to Flachglas AG Delog-Detag. Producing fiber reinforced resin panels with gelcoat fiber layer and lacquer protective. 3,849,226, Cl. 156-247.000.

Bynal Products Inc.: *See—*
Kolling, Byron M., 3,848,797.

Byrne, Eugene C., to Actron Industries, Inc. Atmospheric compensation radiometer system. 3,849,645, Cl. 250-209.000.

C-H Products Corporation: *See—*
Possell, Clarence R., 3,848,775.

Cahoon, John B., Jr., to United States of America, Atomic Energy Commission. Method for producing fueled moderator. 3,849,329, Cl. 252-301.10r.

Calamari, Timothy A., Jr.; Reeves, Wilson A.; Schreiber, Sidney P.; and Cooper, Albert S., Jr., to United States of America, Agriculture. Process for the mercerization of cotton fabrics with liquid ammonia and ammonia/amine solutions. 3,849,067, Cl. 8-115.00.

Calc Securities Systems, Inc.: *See—*
Connery, Colin A., 3,849,614.

Caldwell, Henry Cecil, to Smith Kline Corporation. Novel vinylcarbamate derivatives of phenylpropanolamine. 3,849,573, Cl. 424-311.000.

Calspan Corporation: *See—*
Piech, Kenneth Robert; and Walker, John Elwyn, 3,849,006.

Calvert, Thomas J., to Schlumberger Technology Corporation. Microwave logging apparatus having dual processing channels. 3,849,721, Cl. 324-6.000.

Calvino y Teijeiro, Benito Jose, to Magrini-Fabbriche Riunite Magrini-Scarpa e Magnano M.S.M. S.p.A. Self-blasting compressed-gas electric circuit breaker with improved control mechanism having pneumatic and resilient means for engaging the breaker contact. 3,849,616, Cl. 200-82.00r.

Cameron, Frank L., to Westinghouse Electric Corporation. Method of fabricating improved fuse elements. 3,848,445, Cl. 72-142.000.

Campbell, John H., to General Electric Company. Sequential discharge fluorescent lamp. 3,849,689, Cl. 313-190.000.

Campbell, John Stewart; and Davies, Phineas, to Imperial Chemical Industries, Limited. Catalytic process. 3,849,538, Cl. 423-213.500.

Campion, David John, to Cylinder Forming Limited. Cylinder forming. 3,848,449, Cl. 72-349.000.

Camras, Marvin. ITT Research Institute Video transducer system and cartridge therefor. 3,849,797, Cl. 360-93.000.

Canacho, Vasco G.: *See—*
Anderson, James J.; Canacho, Vasco G.; and Kinney, Robert E., 3,849,368.

Canadian Patents and Development Limited: *See—*
Kusters, Norbert L.; and Moore, William J. M., 3,849,727.
Maitlis, Peter M.; White, Colin; Kang, Jung W.; and Gill, Devinder S., 3,849,459.

Candor, James T. Method and apparatus for removing and/or separating particles from fluid containing the same. 3,849,275, Cl. 204-180.00r.

Canon Kabushiki Kaisha: *See—*
Ihara, Takashi, 3,849,128.
Shoji, Akira; Yanagawa, Hitoshi; and Hirashima, Takashi, 3,848,982.
Tajima, Akira, 3,848,969.
Yamaji, Keizo; and Kurahashi, Akira, 3,848,989.

Cantarano, Marcus. Non-electrostatic method for producing electrographic image. 3,849,126, Cl. 96-1.00r.

Capital Enterprises, Inc.: *See—*
Nichols, Robert A., 3,849,753.

Carborundum Company, The: *See—*
Carpenter, James H., Jr.; and Ixer, Bernard W., 3,848,815.
Economy, James; and Storm, Roger S., 3,849,362.
McMurtry, Carl H.; and Murata, Yorihiro, 3,849,344.

Carbrey, Robert Lawrence, to Bell Telephone Laboratories, Incorporated. Polarity reversal switching circuit. 3,849,607, Cl. 179-86.00.

Cardy, Charles Frederick: *See—*
Crampton, Clifford Archibald; and Cardy, Charles Frederick, 3,849,448.

Carey, Carlton F. Variable aperture X-ray shield. 3,849,649, Cl. 250-320.000.

Carlsen, Henning Gunnar. Pressure spring for a thermoprinter. 3,848,720, Cl. 197-1.00r.

Carmichael, Robert J.: *See—*
Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., 3,848,658.

Carpenter, James H., Jr.; and Ixer, Bernard W., to Carborundum Company, The. Granulating apparatus. 3,848,815, Cl. 241-74.000.

Carpetech Corporation: *See—*
Morse, George A., 3,848,291.

Carter, Jack N. Hydraulic truck bed. 3,848,758, Cl. 214-501.000.

Caruso, Robert M.; and Musick, Charles R., to Combustion Engineering, Inc. Reactor megawatt demand setter. 3,849,637, Cl. 235-151.000.

Caspers, Willi A.: *See—*
Bovensiepen, Hans-Friedrich; and Caspers, Willi A., 3,848,365.

Castillo, Adolfo: *See—*
Jureit, John Calvin; Cotten, Howell J.; Castillo, Adolfo; and Leutwyler, Roy, 3,848,791.

Castor, Edward Earl: *See—*
de Panafieu, Philippe; and Castor, Edward Earl, 3,848,898.

Castor, William M.: *See—*
Turley, Robert R.; Castor, William M.; and Nunnally, Kenneth R., 3,849,339.

Catalano, James A., to Continental Can Company, Inc. Riveted modular conveyor. 3,848,732, Cl. 198-204.000.

Catallozzi, David J. Fixture support. 3,848,386, Cl. 52-706.000.

Caterpillar Tractor Company: *See—*
Gobble, Glenn R.; and Loebs, Richard G., 3,849,078.
Gobble, Glenn R.; and Loebs, Richard G., 3,849,122.
Therkildsen, Henry T., 3,848,852.

Catlin, Robert T., to Remington Arms Company, Inc. Continuous quenching means for a moving wire. 3,848,859, Cl. 266-3.00r.

Ceccarelli, Pietro, to Olivetti, Ing. C., & C., S.p.A. Support of bent stiff wire for suspended files or the like, removable insertable into a furniture drawer. 3,848,748, Cl. 211-178.00r.

Celanese Corporation: *See—*
Ferment, George R.; Prince, Arthur E., Jr.; and Sessa, Paul A., 3,849,529.
McGinnis, Paul H.; McLaughlin, William D., Jr.; and Swander, Robert E., 3,849,040.

Centre National de Recherche Scientifique: *See—*
Guyonnet, Jean-Francis, 3,848,313.

Centro-Maskin i Goteborg AB: *See—*
Johansson, Bengt, 3,849,088.

Cerny, Louis T.: *See—*
Beck, Richard F.; and Cerny, Louis T., 3,848,534.

Champeau, Andre. Observation device. 3,848,961, Cl. 350-63.000.

Channon, Frederick R.; and Fischer, David L., to General Electric Company. Samarium compensation for nuclear reactor fuel. 3,849,248, Cl. 176-68.000.

Charboneau, Benny J.; and O'Connor, Alton J., to Walbro Corporation. Electronically controlled liquid fuel pump. 3,849,031, Cl. 417-417.000.

Charles, Richard J.; and Mitoff, Stephan P., to General Electric Company. Sealed sodium-iodine battery. 3,849,200, Cl. 136-83.00r.

Chase, Herbert S., to Lee, Raymond, Organization, Inc., The. Drawer for folding table. 3,848,545, Cl. 108-26.000.

Chasin, Mark: *See—*
Hoehn, Hans; and Chasin, Mark, 3,849,411.

Chatillon, John, & Sons, Inc.: *See—*
Hejzlar, Sid; and Zweig, Robert M., 3,848,463.

Chaudron, Georges: *See—*
Montuelle, Jean; Chaudron, Georges; and Piaard-Legry, Gerard, 3,849,079.

Chedister, Conkling; and Beckman, Frank H., to Kulart Victor Corporation. Self-threading motion picture projector. 3,848,981, Cl. 352-157.000.

Chekotilo, Leonty Vasilievich: *See—*
Tetjuev, Vladimir Alexandrovich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Popov, Valery Georgievich; Tjurikov, Pavel Ivanovich; and Kosmatenko, Ivan Egorovich, 3,848,657.

Chemetron Corporation: *See—*
Bachmann, Thomas H., 3,848,289.

Chemische Werk Huls Aktiengesellschaft: *See—*
Maass, Gunter; Engel, Frederico; Bernemann, Paul; and Blumel, Harald, 3,849,363.

Chemische Werke Huls Aktiengesellschaft: *See—*
Streck, Roland; and Weber, Heinrich, 3,849,509.

Chen, Tsuan-Tong. Pipe restraining device. 3,848,639, Cl. 138-103.000.

Cherry Electrical Products Corporation: *See—*
Habecker, John W., 3,849,621.

Chertkoff, Abraham. Fetal extractor for use during birth. 3,848,606, Cl. 128-352.000.

Chevallier, Pierre, to Etablissements Genoud & Cie, Societe Anonyme. Cigarette lighter with baffle. 3,849,060, Cl. 431-344.000.

Chevron Research Company: *See—*
Kozlowski, Robert H.; Sieg, Robert P.; and Scott, John W., 3,849,082.
Miner, William R.; and Parker, Charles K., Jr., 3,849,318.

Chiba, Yoshio. Indicating apparatus. 3,849,769, Cl. 340-213.00r.

Chicago Fittings Corporation: *See—*
Hammer, Victor S.; and Brozek, Chester W., 3,848,905.

Chick, Orest Nicholas; and Means, Graham Neville, to Polysar Limited-Polysar Limitee. Paper coated with compositions of polymeric materials. 3,849,183, Cl. 117-155.0ua.

Chiesa, Peter Jordan, Jr., to National Foam System, Inc. Film-forming fire fighting composition. 3,849,315, Cl. 252-3.000.

Chin, James; and Hartley, James C., Jr., to Uniroyal, Inc. Electrolessly plateable polymeric composition. 3,849,172, Cl. 117-47.00a.

Chinn, Leland J.: *See—*
Zawadzki, Joseph F.; and Chinn, Leland J., 3,849,404.

Chino, Yasuyoshi: *See—*
Sato, Ryozi; and Chino, Yasuyoshi, 3,849,498.

Chinon Industries Incorporated: *See—*
Tsujimoto, Noboru; Maruyama, Katsuji; and Misawa, Haruo, 3,848,976.

Chizhov, Leonid Vladimirovich. Sample introduction system for gas chromatograph. 3,848,469, Cl. 73-422.0gc.

Christensen, Burton G.; Leanza, William J.; and Beattie, Thomas R., to Merck & Co., Inc. Amine salts of cis-propenylphosphonic acid. 3,849,482, Cl. 260-501.210.

Christopher, Roland L. Any angle hitch attachment. 3,848,895, Cl. 280-478.00r.

Chrysler Corporation: *See—*
Dolan, Courtney F., 3,848,691.
Nuss, Christopher, 3,848,309.

Chu, Pochen: *See—*
Dwyer, Francis G.; and Chu, Pochen, 3,849,463.

Chubb Fire Security Limited: *See—*
Evans, John L., 3,848,675.

Chukhanov, Zinovy Fedorovich: *See—*
Chukhanov, Zinovy Zinovievich; Chukhanov, Zinovy Fedorovich; Panov, Vladimir Illarionovich; Nikolaev, Anatoly Mikhailovich; Tsuprov, Sergei Andreevich; and Lyashenko, Ivan Vasilievich, 3,848,536.

Chukhanov, Zinovy Zinovievich; Chukhanov, Zinovy Fedorovich; Panov, Vladimir Illarionovich; Nikolaev, Anatoly Mikhailovich; Tsuprov, Sergei Andreevich; and Lyashenko, Ivan Vasilievich. Method of conveying goods in containers along a tube line. 3,848,536, C. 104-147.00r.

Chupka, David E.: *See—*
Marsh, Paul G.; and Chupka, David E., 3,849,245.

Chvertko, Anatoli Ivanovich: *See—*

Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich, 3,849,584.

CH_2O, Inc.: *See—*
Courtright, Burr, 3,848,805.

CH20, Inc.: *See—*
Courtright, Burr, 3,848,625.

Ciardi, Albert A., Jr.: *See—*
Hendrickson, Paul E., 3,848,319.

Ciba Geigy AG: *See—*
Roueche, Armand; Mueller, Willy; and Mory, Rudolf, 3,849,394.

Ciba-Geigy AG: *See—*
Begrich, Rainer; and Seitz, Karl, 3,849,413.
Eigenmann, Gottfried; Kaiser, Leo; and Luethi, Christian, 3,849,155.
Mueller, Volkmar; Berendt, Hans-Ulrich; and Harris, Melvin, 3,849,162.
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,849,163.
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Ciba-Geigy Corporation: *See—*
Brunetti, Heimo; Schwarzenbach, Kurt; and Schmidt, Andreas, 3,849,492.
Gallay, Jean-Jacques; Bosshard, Rene; and Brenneisen, Paul, 3,849,431.
Renner, Alfred; and Haug, Theobald, 3,849,374.
Rittel, Werner; Brugger, Max; Kamber, Bruno; Riniker, Bernhard; Sieber, Peter; and Greven, Hendrik Marie, 3,849,388.
Weis, Claus, 3,849,422.

Cibie Projecteurs: *See—*
Puyplat, Oliver, 3,849,642.

Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., to Grace, W. R., & Company. Method for producing wrinkle free permanently pressed cellulosic textile materials. 3,849,169, Cl. 117-143.00a.

Cimarosti, Giordano: *See—*
Corradi, Bruno; Petrillo, Vincenzo; and Cimarosti, Giordano, 3,849,266.

Cinqualbre, Louise: *See—*
Cinqualbre, Paul; and Cinqualbre, Louise, 3,848,581.

Cinqualbre, Paul; and Cinqualbre, Louise. Apparatus for taking multiple samples of biological liquid. 3,848,581, Cl. 128-2.00f.

Cities Service Company: *See—*
Wolford, Lionel T.; and Versnel, John, 3,849,371.

Citizen Watch Company Limited: *See—*
Nihira, Shohachi, 3,848,527.

Clampitt, Richard L.; and Hessert, James E., to Phillips Petroleum Company. Recovery of hydrocarbons. 3,848,673, Cl. 166-275.000.

Clark, Burton Parker, to General Electric Company. Gun bolt. 3,848,351, Cl. 42-25.000.

Clark Equipment Company: *See—*
Fisher, John F.; and Zeller, Burton S., 3,848,620.
Messner, John S.; and Jones, Robert E., 3,848,692.
Waclawek, Miczyslaw J., 3,848,409.

Clark, John E., Jr., to A-Z International Tool Company. Sheared pipe cutter. 3,848,667, Cl. 166-55.600.

Claxton, Patrick H.; and Keenan, Thomas A., to American Sterilizer Company. Low electrical leakage support. 3,848,714, Cl. 191-33.000.

Clayson N. V.: *See—*
Mortimer, Frans H.; Jacobs, Gerard O.; Decoene, Frans J. G. C.; Braet, August; and Rowland-Hill, Edward W., 3,848,609.

Clow Corporation: *See—*
Anderson, Richard H., 3,848,904.

Coach and Car Equipment Corporation: *See—*
Harder, Arthur J., Jr., 3,848,925.
Harder, Arthur J., Jr., 3,848,937.

Cobb, Jesse M.; and Schaad, William J., to Indak Manufacturing Corporation. Vehicular rotary electrical switch assembly with removable interposed non-conductive plug kill switch means. 3,849,612, Cl. 200-11.00j.

Cochrane, Kenneth Alfred; and Holloway, Robert Geofrey, to McGregor, Robert, & Sons Limited. Device for introducing rods, dowels or the like into concrete paved carriageways. 3,849,016, Cl. 404-100.000.

Cochrane, Robin Adam, to Girling Limited. Improvements in pressure-responsive valve assemblies. 3,848,619, Cl. 137-116.000.

Cocuzza, Gioacchino, to Societa' Italiana Resine S.I.R. S.p.A. Process for the separation of monoethanolamine, diethanolamine, and triethanolamine from crude ethanolamine mixtures. 3,849,262, Cl. 203-38.000.

Cofek, Henry R., to Geisco Associates. Photo-detector for optical inspection system. 3,849,004, Cl. 356-200.000.

Coffen, David; and Fryer, Rodney, to Hoffmann-La Roche Inc. 2-Substituted-3H-1,4-benzodiazepines. 3,849,399, Cl. 260-239.0bd.

Coffen, David Llewellyn; and Fryer, Rodney Ian, to Hoffmann-La Roche Inc. Process for preparing triazolobenzodiazepines. 3,849,434, Cl. 260-308.00r.

Cogger, John F.: *See—*
Unfried, Happy H.; and Cogger, John F., 3,848,514.

Coherent Radiation Laboratories, Inc.: *See—*
Mefferd, Wayne S., 3,849,531.

Coleman, John H., to United States of America, Atomic Energy Commission. Method of oxygen detection and removal. 3,849,539, Cl. 423-219.000.

Colgate-Palmolive Company: *See—*
Grand, Paul Sheldon, 3,849,548.
Hewitt, Gordon Trent, 3,849,348.
Suh, John T., 3,849,574.

Colgate-Polmolive Company: *See—*
Di Salvo, Walter; Smith, Frank R., Jr.; and Kenney, Edward J., 3,849,327.

Collins, Byron R., to General Electric Company. High intensity lamp containing arc extinguishing base. 3,849,691, Cl. 313-318.000.

Colln, Reimer; Hofer, Wolfgang; Maurer, Fritz; and Rohe, Lothar, to Bayer Aktiengesellschaft. O-Ethyl-O-(3-methyl-4-methylmercaptophenyl)-phosphoric acid diester chloride. 3,849,524, Cl. 260-949.000.

Coma, James G.: *See—*
Fowells, Robert W.; Damon, Robert A.; and Coma, James G., 3,849,387.

Combuation Engineering, Inc.: *See—*
Jacobs, Louis John, 3,849,586.

Combustion Engineering Inc.: *See—*
Bevilacqua, Frank, 3,849,257.
Blaskowski, Henry John; and Koucky, Robert Willis, 3,849,662.
Caruso, Robert M.; and Musick, Charles R., 3,849,637.
Jacobs, Louis John, 3,849,206.
Martucci, John Anthony, 3,849,655.
Prestridge, Floyd Leon, 3,849,285.
Schuss, Jack Ascher, 3,849,056.

Commissariat a l'Energie Atomique: *See—*
Ferrand, Bernard; Forrat, Francis; Grange, Yves; Joubert, Jean-Claude; and Mareschal, Jean, 3,849,193.
Pezot, Jacques, 3,849,732.
Renaux, Charley, 3,848,423.
Stohr, Jacques Andre, 3,848,314.

Commonwealth Scientific and Industrial Research: *See—*
Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, 3,849,149.

Commonwealth Scientific and Industrial Research Organization: *See—*
Battaerd, Hendrik Adriaan Jacobus, 3,849,525.

Compagnie General de Radiolgie: *See—*
Hommerin, Michel, 3,849,660.

Compagnie General d'Electricite: *See—*
Pompon, Jean-Paul, 3,849,202.

Compagnie Generale d'Electricite: *See—*
Feuillade, Georges; and Cord, Paul, 3,849,199.

Compagnie Honeywell Bull (Societe Anonyme): *See—*
Khammous, Robert; Langlet, Andre; and Leclercq, Michel, 3,849,757.

Conant, Barton C.; and Yao, Szee Ming, to Abbott Coin Counter Co., Inc. Coin processor having error-indicating system. 3,848,614, Cl. 133-8.00r.

Conaway, Mildred; Thompson, Alligene; Bowen, Dorsie Mae; Brown, Danny; and McGarrah, Larry, to Bear Brand Hosiery Co. Method of securing a waistband to combination garment. 3,848,266, Cl. 2-237.000.

Condolios, Elie; and Van Essen, Uilke, to N.V. Technische Maatschappij Bergmann and Societe Grenobloise d'Etudes et d'Applications Hydrauliques. Method and apparatus for separating particles from a liquid. 3,849,310, Cl. 210-196.000.

Conger, Robert P.: *See—*
Palmer, Leon B.; and Conger, Robert P., 3,849,157.
Palmer, Leon B.; and Conger, Robert P., 3,849,158.
Palmer, Leon B.; and Conger, Robert P., 3,849,159.

Congoleum Industries, Inc.: *See—*
Palmer, Leon B.; and Conger, Robert P., 3,849,157.
Palmer, Leon B.; and Conger, Robert P., 3,849,158.
Palmer, Leon B.; and Conger, Robert P., 3,849,159.

Connery, Colin A., to Calc Securities Systems, Inc. Tamper switch device for detection of relative motion. 3,849,614, Cl. 200-61.410.

Connor Engineering Corporation: *See—*
Day, Thomas L., 3,848,799.

Conover, Lloyd H.; and Woodward, Robert B., to Pfizer Inc. D-ring substituted 6-deoxytetracyclines. 3,849,493, Cl. 260-559.0at.

Consolidated Foods Corporation: *See—*
Bird, Stanford W.; Wasserman, Jerome D.; and Hatley, Earl L. (said Wesserman and Hatley assors. to), 3,848,795.

Container Equipment Corporation: *See—*
Allen, Russell W., 3,848,397.

Conti, John A.: *See—*
Boucher, Raymond W.; Boudreau, Robert; and Conti, John A., 3,849,008.

Continental Can Company, Inc.: *See—*
Catalano, James A., 3,848,732.
Holk, Albert J., Jr., 3,848,557.

Continental Oil Company: *See—*
Martin, Theodore T.; and Allen, Marvin C., 3,849,300.

Control Switch, Inc.: *See—*
Hopkins, Alton W., 3,848,434.

Controls Research Corporation: *See—*
Walker, Frank A., Jr., 3,849,611.

Conversion Chemical Corporation: *See—*
Beckwith, Merton M.; and Fong, Jaan-Jiue, 3,849,218.

Convertex, Ltd.: *See—*
Marosi, Michael N., 3,849,207.
Marosi, Michael N., 3,849,208.

Conwicke, Joel A., to Du Pont de Nemours, E. I., and Company. Barium- or sirontium-containing glass frits for silver metallizing compositions. 3,849,142, Cl. 106-1.000.

Cook, John W.: *See—*
Peterson, Robert S.; and Cook, John W., 3,848,443.

Cooley, Richard F., to Owens-Illinois, Inc. Laser glass host compositions comprising TeO_2,PbO and ZnO. 3,849,739, Cl. 331-94.50e.

Cooper, Albert S., Jr.: *See—*
Calamari, Timothy A., Jr.; Reeves, Wilson A.; Schreiber, Sidney P.; and Cooper, Albert S., Jr., 3,849,067.

Cooperatieve Vereniging Suiker Unie U.A.: *See—*
Aartsen, Andreas Marinus, 3,849,583.

Copeland Corporation: *See—*
Bergman, Ernest R., 3,848,702.

Copeland, John W. Dental instrument. 3,848,336, Cl. 32-59.000.

Corby, Neville Slater; Hunter, James Stuart; and Leng, John Lindley, to Imperial Chemical Industries Limited. Water-soluble azo dyestuffs containing cationic groups by coupling diazonium nitrophenyl compounds with homophthalimides. 3,849,393, Cl. 260-155.00.

Corco, Inc.: *See—*
Schieser, Warren J., 3,848,776.

Cord, Paul: *See—*
Feuillade, Georges; and Cord, Paul, 3,849,199.

Cordes, Linus F.; and Garfinkel, Marvin, to General Electric Company. Schottky barrier diodes. 3,849,789, Cl. 357-15.000.

Corn, Robert J., to United States of America, Navy. Closed-loop gun control system. 3,848,509, Cl. 89-41.0aa.

Corning Glass Works: *See—*
Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., 3,849,097.

Corradi, Bruno; Petrillo, Vincenzo; and Cimarosti, Giordano, to Montecatini Edison S.p.A. Process for the electrolysis of alkali chloride solution. 3,849,266, Cl. 204-98.000.

Cosco, Robert J.; and Pappas, John A., to GTE Sylvania Incorporated. Flash tube having improved cathode. 3,849,690, Cl. 313-217.000.

Costa Tecnologie Speciali S.p.A.: *See—*
Giuffredi, Giancarlo, 3,848,318.

Costantini, Michel: *See—*
Bourdin, Francois; Costantini, Michel; Jouffret, Michel; and Lartigau, Guy, 3,849,502.

Costruba, Peter, to Angeles Metal Trim Co. Support structure for shelving. 3,848,364, Cl. 52-36.000.

Cotten, Howell J.: *See—*
Jureit, John Calvin; Cotten, Howell J.; Castillo, Adolfo; and Leutwyler, Roy, 3,848,791.

Coulter Electronics, Inc.: *See—*
Bull, Brian S., 3,848,796.

Coulter Electronics Inc., mesne: *See—*
Nelson, John Russell, 3,848,962.

Courtright, Burr, to CH20, Inc. Prime mover for and in wheel-line irrigation apparatus. 3,848,625, Cl. 137-344.000.

Courtright, Burr, to CH_2O, Inc. Winch-driven irrigation apparatus. 3,848,805, Cl. 239-189.000.

Couture, John W.: *See—*
Bantz, Walter J.; Couture, John W.; and Pittaro, Richard J., 3,848,460.

Cowan, Arnold A.: *See—*
Thompson, John T.; and Cowan, Arnold A., 3,848,710.

CPC International Inc.: *See—*
Armbruster, Frederick C.; and Kooi, Earl R., 3,849,194.

Craig, Lloyd L. Exercise apparatus on pedestal for patients. 3,848,870, Cl. 272-67.000.

Cramer, William H. Negative pressure underfire control system. 3,848,551, Cl. 110-18.00r.

Crampton, Clifford Archibald; and Cardy, Charles Frederick. Vapor phase oxidation of benzene to maleic anhydride at low oxygen to benzene molar ratios and high benzene concentrations. 3,849,448, Cl. 260-346.80a.

Crawford, Thomas G.; and Kearse, William E., to Westinghouse Electric Corporation. Tubing made from B-staged epoxy-resin composition. 3,848,640, Cl. 138-145.000.

Creager, John E.; and Taylor, Robert G., to General Motors Corporation. Combination engine operated fuel pump and air pump. 3,849,029, Cl. 417-388.000.

Cresswell, Ronald M.: *See—*
Mentha, John W.; Shaffner, Janice V.; and Cresswell, Ronald M., 3,849,416.

Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., to Burroughs Wellcome & Co. (U.S.A.) Inc. 5-Benzyl pyrimidines intermediates. 3,849,407, Cl. 260-240.00r.

Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., to Burroughs Wellcome Co. 5-Benzyl pyrimidines intermediates therefor and method. 3,849,470, Cl. 260-465.00f.

Crosswell, Flay D.: *See—*
Linhart, James T.; Crosswell, Flay D.; and Galbreath, Gerald W., 3,848,920.

Crowther, Ted J.; Jacobson, Charles F.; and Sutherlin, Kent K., to Optical Data Systems, Inc. Data storage and retrieval system. 3,849,766, Cl. 340-173.0lm.

Crozier, Donald G.: *See—*
Weber, Kenneth E.; Crozier, Donald G.; and Hawley, Wilbur W., 3,849,264.

CTS Corporation: *See—*
Scott, Kelley E., Jr.; Kemper, Daryl M.; Grove, Lloyd E.; and Kiess, Ronald J., 3,849,681.

Culbertson, George W., to FMC Corporation. Clutch actuating mechanism. 3,848,717, Cl. 192-93.00a.

Cummings, Gordon F., III, to Borg-Warner Corporation. Temperature modulated pressure regulating valve. 3,848,622, Cl. 137-468.000.

Cunningham, Hugh: *See—*
Raetzsch, Carl W.; Darlington, William B.; and Cunningham, Hugh, 3,849,280.

Cunningham, James W.: *See—*
Pavlik, Norman M.; and Cunningham, James W., 3,848,331.

Cuntze, Ulrich: *See—*
Diery, Helmut; Cuntze, Ulrich; May, Adolf; and Milewski, Eckhard, 3,849,435.

Cuomo, John J.: *See—*
Braslau, Norman; Cuomo, John J.; Harris, Erik P.; and Hovel, Harold J., 3,849,707.

Curtiss-Wright Corporation: *See—*
Jones, Charles, 3,849,035.

Cutler-Hammer, Inc.: *See—*
Link, Donald A.; and Williams, Fred H., 3,849,751.

Cuzner, David E.; Dodman, Charles O. R.; and Heath, John S., to International Business Machines Corporation. Magnetic disc apparatus. 3,849,800, Cl. 360-97.000.

Cylinder Forming Limited: *See—*
Campion, David John, 3,848,449.

Daimler-Benz Aktiengesellschaft: *See—*
Wilfert, Karl; Gmeiner, Gunter; Grabner, Christian; and Nockemann, Ernst, 3,848,910.

Dall'Armi, Georg V., to Siemens Aktiengesellschaft. Optical range measuring apparatus. 3,848,999, Cl. 356-4.000.

D'Ambrosio, Anthony H. Multiple size slacks. 3,848,268, Cl. 2-237.000.

Damon Corporation: *See—*
Hurtig, Carl R.; Kent, Robert L.; and Blumle, Leo J., 3,848,633.

Damon, Robert A.: *See—*
Fowells, Robert W.; Damon, Robert A.; and Coma, James G., 3,849,387.

Dana Corporation: *See—*
Enerson, Donald W.; and Warfield, Glenn R., 3,849,736.

Danberg, Victor. Pulley for magnetic separation of solid wastes. 3,848,743, Cl. 209-218.000.

Dane, Dan H., to United States of America, National Aeronautics and Space Administration. Orthotic arm joint. 3,849,668, Cl. 307-149.000.

Daniel, James T.; Templeton, George E.; and Smith, Roy J., Jr., to United States of America, Agriculture. Control of aeschynomene sp. with Colletrotrichum gloeosporioides Penz. f. sp. aeschynomene. 3,849,104, Cl. 71-65.000.

Daniel, Truman Knox, Jr.: *See—*
Bloejack, James William, Jr.; Daniel, Truman Knox, Jr.; and Rolison, Darrell Edward, 3,848,548.

Daniels, Arthur L.: *See—*
Snover, John A.; Waibel, Joseph H.; and Daniels, Arthur L., 3,849,542.

Daniels, David A.: *See—*
Wendler, Kenneth T.; and Daniels, David A., 3,849,322.

Daniels, David A.; and Davis, William R., to M&T Chemicals Inc. Preparation of trineophyl tin halides. 3,849,460, Cl. 260-429.700.

D'Antonio, Lawrence E. BCG as adjuvant in malaria vaccination. 3,849,551, Cl. 424-88.000.

Daravingas, George V.: *See—*
Hall, Richard C.; Kidd, Norman D.; and Daravingas, George V., 3,849,579.

Darlington, William B.: *See—*
Raetzsch, Carl W.; Darlington, William B.; and Cunningham, Hugh, 3,849,280.

Darwent, Richard H., to Westinghouse Electric Corporation. Lift apparatus. 3,848,706, Cl. 187-86.000.

Daumas, Jean-Claude; and Le Page, Madeleine. Catalyst support and oxychlorination catalyst embodying. 3,849,338, Cl. 252-441.000.

David, John. Means to assure uniform flow of an abrasive solution. 3,848,366, Cl. 51-129.000.

Davidson, Bruce R.; and Agneta, Agustus R., to Parfums Rochas, Inc. Pressure testing device for glass aerosol bottles. 3,848,459, Cl. 73-41.200.

Davidson, William Ward, Jr., to Van Vlaanderen Machine Company. Printing press method of assembly. 3,848,320, Cl. 29-428.000.

Davies, Evan Ellis: *See—*
Bourne, Kenneth Hugh; Davies, Evan Ellis; and Pitkethly, Robert Chalmers, 3,849,299.

Davies, Gareth Morse, to Imperial Chemical Industries Limited. Furo[3,2-d] [1,2,3]diazaborines. 3,849,449, Cl. 260-347.200.

Davies, Phineas: *See—*
Campbell, John Stewart; and Davies, Phineas, 3,849,538.

Davis, Thomas Jefferson, Jr. Supporting device. 3,848,700, Cl. 182-181.000.

Davis, William R.: *See—*
Daniels, David A.; and Davis, William R., 3,849,460.

Day, Thomas L., to Connor Engineering Corporation. Ceiling air diffuser. 3,848,799, Cl. 236-49.000.

Dayton Progress Corporation: *See—*
Gaggrave, Robert J., 3,848,452.
Gargrave, Robert J.; and Holiga, Ludomil A., 3,848,494.
Stevens, Harry A.; and Randolph, Allan E., Sr., 3,848,496.

De Barbieri, Joseph L., to Beth-Con Realty, Inc. Safety barrier. 3,848,854, Cl. 256-65.000.

De Bergh, Guy; and Fontaine, Jean, to Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique (Alcatel). Voltage converter. 3,849,716, Cl. 321-2.000.

de Panafieu, Philippe; and Castor, Edward Earl. Connector for use between an underwater wellhead and a bearing surface. 3,848,898, Cl. 285-61.000.

De Smedt, Frans Antoon: *See—*
Jeurissen, Lambert Gaston; and De Smedt, Frans Antoon, 3,849,379.

Dea, Frank J.; and Nelson, Eric L., to Nelson Research & Development Company. Cyclic nucleotide therapeutic preparation. 3,849,553, Cl. 424-180.000.

Deaton, David W.; Brower, Stephen M.; and Durham, Marhsall P., Jr., to Deaton Medical Company. Disposable safety float valve. 3,848,628, Cl. 137-434.000.

Deaton Medical Company: *See—*
Deaton, David W.; Brower, Stephen M.; and Durham, Marhsall P., Jr., 3,848,628.

Decoene, Frans J. G. C.: *See—*
Mortimer, Frans H.; Jacobs, Gerard O.; Decoene, Frans J. G. C.; Braet, August; and Rowland-Hill, Edward W., 3,848,609.

Deep Oil Technology, Inc.: *See—*
Falkner, Chester B., 3,848,949.

Degginger, Edward R.; and Frisco, John S., to Allied Chemical Corporation. Method and apparatus for the preparation and ejection of a viscous dilatant material. 3,848,802, Cl. 239-10.000.

Degueldre, Louis; Killens, Charles; and Bourgeois, Louis, to Solvay & Cie. Metal electrodes and coatings therefor. 3,849,282, Cl. 204-290.00f.

Dehlbom, Eugene K.; and Foshaug, Rockne H. Cable straightener. 3,848,450, Cl. 72-384.000.

Dehler, Bernhard, to Metallwerk Max Brose & Co. Safety locking device for automobile reclining seats. 3,848,923, Cl. 297-366.000.

Dell Holdings Limited: *See—*
Elias, Murray A., 3,848,851.

Delong, Donald C.; Lively, David H.; and Neuss, Norbert, to Lilly, Eli, and Company. Antiviral antibiotic. 3,849,419, Cl. 260-268.0pc.

Demetrescu, Mihai C. Resonant gas-expansion engine with hydraulic energy conversion. 3,848,415, Cl. 60-595.000.

Dempski, Robert E.; and Saboe, Joseph C., to Merck & Co., Inc. Indomethacin suppositories. 3,849,549, Cl. 424-78.000.

Deneke, Klaus; Falkenhain, Wilhelm; and Hack, Peter, to Dynamit Nobel Aktiengesellschaft. Method of preparing a zirconium oxide that is crystallized mostly or completely in cubic form. 3,849,532, Cl. 423-82.000.

Denker, James M., to Nutron Corporation. Cams. 3,848,481, Cl. 74-567.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Kadowaki, Takashi; Dohi, Michio; and Yokobori, Katsuichi, 3,849,519.

Dennis, Sam. Trailer hitch assembly. 3,848,896, Cl. 280-423.00r.

Denzler, Eric-Alain, to Fratmann S.A. Manufacture of 1-alkenyl-2-aminomethyl pyrrolidines. 3,849,442, Cl. 260-326.850.

Derfer, John M.: *See—*
Bordenca, Carl; and Derfer, John M., 3,849,571.

Descamps, Marcel; and Inion, Henri, to Labaz. Indole derivatives in reducing inflammation. 3,849,564, Cl. 424-263.000.

DeSpain, Jimmy F. Carrier garment-cushion. 3,848,267, Cl. 2-94.000.

Deutsch Company Metal Components Division, The: *See—*
Allin, Frederick R., 3,848,451.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Hoffmann, Peter; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,849,484.
Knorre, Helmut; and Leidl, Peter, 3,848,391.

Dexter Corporation: *See—*
Fetscher, Charles A.; and Schweyen, Paul R., 3,849,383.

Dexter Corporation, The: *See—*
Fetscher, Charles A.; and Rosso, Michael J., 3,849,187.

Dhein, Rolf; Rudolph, Hans; Kreuder, Hans-Joachim; and Gebauer, Herbert, to Bayer Aktiengesellschaft. Coating with pulverulent mixtures of hydroxy containing polymers and caprolactam masked polyisocyanates. 3,849,160, Cl. 117-17.000.

Di Salvo, Walter; Smith, Frank R., Jr.; and Kenney, Edward J., to Colgate-Polmolive Company. Manufacture of free-flowing particulate heavy duty synthetic detergent composition containing nonionic detergent and anti-redeposition agent. 3,849,327, Cl. 252-10.000.

Dial, Ralph E.; Keyes, John J., Jr.; and Krewson, John W., Jr., to United States of America, Atomic Energy Commission. Magnetic temperature sensor. 3,848,466, Cl. 73-349.000.

Diamond Shamrock Corporation: *See—*
Bennett, John E.; Burkhardt, James W.; and Koftfield, Richard E., 3,849,281.
Palm, Bert E.; and Kennedy, Alexander W., 3,849,141.

Dickenson, Harvard G., to Valve Specialty Supply, Inc. Double block and bleed gate valve to control unidirectional meter proover sphere. 3,848,621, Cl. 137-268.000.

Didier-Kellogg Industrieanlagenbau GmbH: *See—*
Flockenhaus, Claus; Simonis, Wolfgang; Beck, Kurt-Gunther; and Echterhoff, Heinrich, 3,849,258.

Diepeveen, John C. Actuator for tool moving mechanism. 3,848,473, Cl. 74-53.000.

Diery, Helmut; Cuntze, Ulrich; May, Adolf; and Milewski, Eckhard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Imidazolinium salts as softening agents for textiles. 3,849,435, Cl. 260-309.600.

Dika, Jerry Felix: *See—*
Dika, Michael; and Dika, Jerry Felix, 3,848,648.

Dika, Michael; and Dika, Jerry Felix. Tree felling apparatus. 3,848,648, Cl. 144-34.00a.

Dillard, John W.: *See—*
Tringali, Dominick; and Dillard, John W., 3,849,783.

Dillinger, Lester L. Method of reconditioning a heat exchanger. 3,848,371, Cl. 51-241.500.

Dinh-Nguyen, Nguyen; and Stenhagen, Einar August, to Incentive Research Development AB. Method of deuterating organic compounds. 3,849,458, Cl. 260-413.000.

DiTirro, Domenic A. Fail safe apparatus for fluid actuated systems. 3,848,848, Cl. 251-31.000.

Dix, James S.: *See—*
Reed, Jerry O.; and Dix, James S., 3,849,352.

Dix, Robert M.; and Taylor, Carol O., to Texas Instruments, Incorporated. Floating annulus for gas parting to a moving heat exchanger. 3,849,652, Cl. 250-352.000.

Dixon, Earl: *See—*
Mason, Robert J.; and Dixon, Earl, 3,849,746.

Dobrovolsky, Evgeny Ivanovich: *See—*
Lykov, Mikhail Vasilievich; Rybalchenko, Gleb Fedorovich; Korotkov, Mikhail Alexeevich; Dobrovolsky, Evgeny Ivanovich; Rudenko, Inna Lukinichna; Avilov, Oleg Vladimirovich; and Bljumberg, Yakov Benedictovich, 3,849,233.

Dochterman, Richard W., to General Electric Company. Mounting adapter means for dynamoelectric machine. 3,848,837, Cl. 248-14.000.

Dodge, William L.: *See—*
Browning, Walter P.; and Dodge, William L., 3,848,835.

Dodman, Charles O. R.: *See—*
Cuzner, David E.; Dodman, Charles O. R.; and Heath, John S., 3,849,800.

Doering, Charles W., to Brinly-Hardy Co., Inc. Rotary brush sweeper and bagger. 3,849,043, Cl. 15-79.000.

Doherty, John, Jr., to Texas Instruments, Incorporated. Thermally actuated valve assembly. 3,848,676, Cl. 169-37.000.

Dohi, Michio: *See—*
Kadowaki, Takashi; Dohi, Michio; and Yokobori, Katsuichi, 3,849,519.

Dolan, Courtney F., to Chrysler Corporation. Full time four wheel drive. 3,848,691, Cl. 180-44.00r.

Dolfini, Joseph Edward, to Squibb, E. R., & Sons, Inc. 4-Substituted-Δ2-cephalosporin derivatives. 3,849,408, Cl. 260-243.00c.

Domergue, Annick Martha Suzanne Simone: *See—*
Mingasson, Georges Raymond Henry; and Domergue, Annick Martha Suzanne Simone, 3,849,331.

Doric Corporation: *See—*
Youra, Charles J., 3,848,495.

Dorr-Oliver Incorporated: *See—*
Schall, Robert A., 3,849,033.

Doss, Richard C.; and Gingerich, Leo L., to Phillips Petroleum Company. Chromate curable sealant compositions. 3,849,381, Cl. 260-75.00s.

DOTCO Incorporated: *See—*
Jambor, Dorothy E., 3,848,947.

Douglas, James Bruce. Drafting tables. 3,848,544, Cl. 108-6.000.

Douros, John D., Jr.: *See—*
Kerst, Al F.; Douros, John D., Jr.; and Brokl, Milan, 3,849,560.

Dow Chemical Company, The: *See—*
Hargash, Paul; and Karle, Franklin J., 3,848,470.
Kurihara, Norman H.; and Bublitz, Donald E., 3,849,415.
Mod, William A.; and Enos, James H., 3,849,118.
Motley, Herman R.; Morris, Earl F.; and Pavlich, Joseph P., 3,849,316.
Pitts, Charles A., 3,848,670.
Smith, Harry A., 3,849,375.
Snover, John A.; Waibel, Joseph H.; and Daniels, Arthur L., 3,849,542.
Tong, Yulan C., 3,849,420.
Turley, Robert R.; Castor, William M.; and Nunnally, Kenneth R., 3,849,339.
Zweigle, Maurice L., 3,849,361.

Dowdeswell, Charles Vernon Roger. Reversible plough operating means. 3,848,678, Cl. 172-225.000.

Downing, Donald M. Traffic control sign. 3,848,562, Cl. 116-63.00r.

Downs, Thomas C., to General Motors Corporation. Combination apex and corner seal spring for rotary engine. 3,849,037, Cl. 418-121.000.

Doyle, Gerald, to Exxon Research and Engineering Company. Disproportionation process. 3,849,513, Cl. 260-683.00d.

Draft Systems, Inc.: *See—*
Fallon, Merton R., 3,848,631.

Draper, Marshall D.; and Levy, Louis, to Riker Laboratories, Inc. Anti-inflammatory treatment. 3,849,578, Cl. 424-330.000.

Dray, Walter L., to Bendix Corporation, The. Means for maintaining a fixed flow through a breathing regulator in an inhalation system. 3,848,617, Cl. 137-88.000.

Drejza, John Edward: *See—*

Bolan, Peter Samuel; Bryant, Aramis Duane; Drejza, John Edward; Holovka, Charles Stephen; and Weber, Ludwig Wilhelm, 3,848,722.

Drelich, Arthur H.; and Lukacs, George J., to Johnson & Johnson. Synthetic resin composition and methods of utilizing the same. 3,849,173, Cl. 117-62.100.

Dresser Industries, Inc.: *See*—
Huslander, William L.; and Glover, Charles J., 3,848,638.

Drostholm, Frede Hilmar. Method for making reinforced of filled resin products. 3,849,527, Cl. 264-35.000.

Du Bose, Samuel R. Amphibious motorcycle. 3,848,560, Cl. 115-1.00r.

Du Pont de Nemours, E. I., and Company: *See*—
Bakermans, Fransiscus Cornelius; and Thoms, William Charles, 3,848,316.
Begland, Robert Walter, 3,849,479.
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Conwicke, Joel A., 3,849,142.
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Wyeth, Nathaniel Convers; and Roseveare, Ronald Newman, 3,849,530.

Dubeck, Michael, to Ethyl Corporation. Gasoline additive. 3,849,083, Cl. 44-72.000.

Duffy, James J.: *See*—
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Dulebohn, David H.; Landy, Arney, Jr.; and Brandt, Roy Earl, to Andew Engineering Company. Wire electrode electric erosion device. 3,849,624, Cl. 219-69.00v.

Dumas, Emile V. Standpipe vent system and fitting for multi-story buildings. 3,848,275, Cl. 4-211.000.

Dumbaugh, William H., Jr.: *See*—
Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., 3,849,097.

Dumont Aviation Associates: *See*—
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Duncan, John L.; and Duthie, Fredrick W., to Singer Company, The. Assembly of externally accessible brushes. 3,849,684, Cl. 310-242.000.

Dunlop Limited: *See*—
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Durham, Marhsall P., Jr.: *See*—
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Durkop, Hermann, to Forval-Verkaufsgesellschaft H. Durkop & Co. Tank for fuel oil or other liquids. 3,848,765, Cl. 220-9.00a.

Durst A.G. Fabrik Fototechnischer Apparate: *See*—
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Durvasula, Srirama S., to Honeywell Information Systems, Inc. Selection apparatus for matrix array. 3,849,768, Cl. 340-174.0tb.

Duthie, Fredrick W.: *See*—
Duncan, John L.; and Duthie, Fredrick W., 3,849,684.

Dwyer, Francis G.; and Chu, Pochen, to Mobil Oil Corporation. Prevention of silica pore obstruction in crystalline aluminosilicates. 3,849,463, Cl. 260-448.00c.

Dwyer, Gregory J.; and Ferris, Walla L., to International Telephone and Telegraph Corporation. Fingers employing inserts to support work pieces in a flow solder machine. 3,848,864, Cl. 269-46.000.

Dyer, James L., to Rewop Company. Tailgate release. 3,848,918, Cl. 296-57.00r.

Dynamics Corporation of America: *See*—
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Dynamit Nobel Aktiengesellschaft: *See*—
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Dynan, Forest J., to Rockwell International Corporation. Dual polarization responsive radar having improved response to small targets. 3,849,780, Cl. 343-7.00a.

Dynell Electronics Corporation: *See*—
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Dzalba-Lyndis, Serge Yvan: *See*—
Jannot, Michel Rene; Vaillant, Robert Guillaume; and Dzalba-Lyndis, Serge Yvan, 3,848,697.

Earhart, Howard F.; Jacoby, Frederick J.; and Starck, Clemens B., to Eastman Kodak Company. Photographic articles and materials useful in their manufacture. 3,849,191, Cl. 117-226.000.

Eastern Railway Company: *See*—
Beck, Richard F.; and Cerny, Louis T., 3,848,534.

Eastman, James M., to Bendix Corporation, The. Fluidic compressor air bleed valve control apparatus. 3,849,020, Cl. 425-28.000.

Eastman, James M.; and Schuster, Robert W., to Bendix Corporation, The. Compressor geometry control apparatus for gas turbine engine. 3,849,021, Cl. 415-30.000.

Eastman Kodak Company: *See*—
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Stahly, Frederick A.; and Merrill, Stewart H., 3,849,165.
Wadsworth, Donald H.; and Perkins, William C., 3,849,144.

Eaton, James W.; and Luck, Allan J., to Masonite Corporation. Composition shingle. 3,848,384, Cl. 52-420.000.

Ebauches S.A.: *See*—
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Ebine, Mitsuo: *See*—
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Ebner, Edwin D., 20% to Lee, Raymond, Organization, Inc., The. Snow mold. 3,848,846, Cl. 249-66.000.

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Echterhoff, Heinrich: *See*—
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Eckert, Alton B., Jr.; and Steinmetz, John H., to Pitney-Bowes, Inc. Reading apparatus for optical bar codes. 3,849,632, Cl. 235-61.11e.

Eckrich, Peter & Sons, Inc.: *See*—
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Economy, James; and Storm, Roger S., to Carborundum Company, The. Incorporation of fillers in insoluble, infusible oxybenzoyl polymers. 3,849,362, Cl. 260-33.20r.

Eder, Ulrich; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Benzopyran derivatives. 3,849,447, Cl. 260-345.200.

Egger, Carl T.; and Olson, Robert E., to Grain Processing Corporation. Recovery of protein. 3,849,391, Cl. 260-123.500.

Eichenlaub, John E. Safe infrared radiation-emitting apparatus. 3,849,063, Cl. 432-185.000.

Eigenmann, Gottfried; Kaiser, Leo; and Luethi, Christian, to Ciba-Geigy AG. Brightening of polyacrylonitrile wet tow. 3,849,155, Cl. 117-7.000.

Eisenberg, Mark F.; and Harmon, William J., Jr., to Burroughs Corporation. Display panel reset and safety timing circuit. 3,849,702, Cl. 315-169.0tv.

Elder, Fred Grove: *See*—
Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,849,231.

Electrohome Limited: *See*—
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Elgin, Joliet: *See*—
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Elias, Murray A., to Dell Holdings Limited. Jacking device. 3,848,851, Cl. 254-108.000.

Elkins, Vance V., Jr. Golf glove, system and method. 3,848,874, Cl. 273-183.00b.

Elliott, James O.; and Keller, Chris F., Jr., to General Motors Corporation. Windshield wiper control circuit. 3,849,711, Cl. 318-443.000.

Elmore, Richard R. System for anchoring modular housing units. 3,848,376, Cl. 52-169.000.

Elphiac: *See*—
Trine, Joseph, 3,849,625.

Elton, Richard L., to Sandoz-Wander, Inc. Thiosemicarbazones as antifertility agents. 3,849,575, Cl. 424-323.000.

Emanuel, Nikolai Markovich: *See*—
Malievsky, Alexandr Dmitrievich; Vints, Viktor Vladimirovich; Emanuel, Nikolai Markovich; and Parfenov, Viktor Nikolaevich, 3,849,499.

Emhart Corporation: *See*—
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Emhart Zurich S.A.: *See*—
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Endou, Hirohide; Kawasaki, Jun; Fujimoto, Yoshiji; Nakane, Keiichi; and Kitazume, Yoshiaki, to Hitachi, Ltd. Multi-dimensional pattern recognition processor. 3,849,760, Cl. 340-146.30h.

Endres, Dan D., to Kimberly-Clark Corporation. Prefolded diaper with improved leg fit. 3,848,595, Cl. 128-284.000.

Endres, Dan D., to Kimberly-Clark Corporation. Prefolded disposable diaper. 3,848,597, Cl. 128-287.000.

Enebo, Lennart Eugen: *See*—
Mogren, Hakan Lars; Hedenskog, Gudmund Oscar; and Enebo, Lennart Eugen, 3,848,812.

Enerson, Donald W.; and Warfield, Glenn R., to Dana Corporation. Frequency synthesizer having frequency control loop with keyed fixed frequency oscillator. 3,849,736, Cl. 331-1.00a.

Engel, Frederico: *See*—
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Engelbrecht, Orest: *See*—

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Engelhard Minerals & Chemicals Corporation: *See—*
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Engineering Plastics, Inc.: *See—*
Morse, John W., 3,848,306.

Ennulat, Reinhard D., to United States of America, Army. Charge coupled signal processor. 3,849,651, Cl. 250-349.000.

Enos, James H.: *See—*
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Enthone, Incorporated: *See—*
Kampe, Marcis M., 3,849,325.

Epstein, Aaron Meyer. Variable-speed, positive-drive transmission providing output speeds from zero R.P.M. up to full output R.P.M. 3,848,474, Cl. 74-117.000.

Epstein, Philip L.: *See—*
Wang, Kuei-Send; Epstein, Philip L.; and Lu, John Hsueh Chung, 3,849,764.

E.R.A. Patents Limited: *See—*
Jackson, Geoffrey N.; Pickard, Robert G.; Brackley, Graham; and Satchell, David W., 3,849,283.

Erhardt, Manfred, to Hurth, Carl, Maschinen-und Zahnradfabrik. Milling tool for working of grooves or slots. 3,848,512, Cl. 90-11.00a.

Erickson, Vedrick A.: *See—*
Bauman, Jack L.; and Erickson, Vedrick A., 3,848,552.

Ericsson, Bjorn: *See—*
Jysky, Goran; Mardla, Ilmar; and Ericsson, Bjorn, 3,848,686.

ESB Incorporated: *See—*
Bernstein, Philip; and Varker, Alan E., 3,849,386.

Eshelman, Cheston Lee. Tire bumper kit. 3,848,736, Cl. 206-223.000.

Esso Research and Engineering Company: *See—*
Long, Robert Byron, 3,849,297.
Tarossi, Frank J., 3,848,559.

Etablissement Public: Institut National de la Sante et la Recherche Medicale: *See—*
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Etablissements Genoud & Cie, Societe Anonyme: *See—*
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Ethyl Corporation: *See—*
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Valdo, Alex R., 3,848,666.

Eue, Ludwig: *See—*
Metzger, Carl; and Eue, Ludwig, 3,849,432.

Evans, Arthur. Fixed point probe card and an assembly and repair fixture therefor. 3,849,728, Cl. 324-158.00f.

Evans, John L., to Chubb Fire Security Limited. Foam-producing apparatus. 3,848,675, Cl. 169-15.000.

Everitt, Scott F., to Acoustic Fiber Sound Systems, Inc. Loud speaker housing systems. 3,848,696, Cl. 181-156.000.

Excelermatic, Inc.: *See—*
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Exxon Research and Engineering Company: *See—*
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Fa. International Pollution Control Systems, Inc.: *See—*
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Fabbrica Italiana Magneti Marelli, S.p.A.: *See—*
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Faber, Kurt Heinrich Albert Erich, to Sandvik Aktiebolag. Cutting insert and cutting tool assembly. 3,848,303, Cl. 29-96.000.

Faber, Ruth: *See—*
Wolff, Werner; Faber, Ruth; and Ruchlack, Kasimir, 3,849,556.

Fagan, Arthur Wayne, to Union Oil Company of California. Packaging and purifying graphite. 3,848,739, Cl. 206-443.000.

Falize, Claude: *See—*
Biarnais, Paul; Falize, Claude; and Sitaud, Gilbert, 3,849,475.

Falk, Edward J., to Wagner Electric Corporation. Parking brake and wear adjustment means. 3,848,704, Cl. 188-71.800.

Falk, Sidney, to Fort Lock Corporation. Bicycle lock carrying bracket. 3,848,783, Cl. 224-39.00r.

Falkenhain, Wilhelm: *See—*
Deneke, Klaus; Falkenhain, Wilhelm; and Hack, Peter, 3,849,532.

Falkner, Chester B., to Deep Oil Technology, Inc. Subsea button-type electrical connector. 3,848,949, Cl. 339-75.00m.

Fallon, Merton R., to Draft Systems, Inc. Beer keg protective device. 3,848,631, Cl. 137-505.110.

Fanini, Luigi. Module for furniture development. 3,848,942, Cl. 312-257.00r.

Farah, Basil S.; and Schroeder, Herbert M., to Textron, Inc. Polyureaurethanes produced from a mixture of two polyamines. 3,849,360, Cl. 260-33.20r.

Farbenfabrik Bayer Aktiengesellschaft: *See—*
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Wolf, Erhard; Kohl, Hans; and Hartfelder, Gunter, 3,849,559.

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Fariello, Leonard Anthony. Method and means for mounting coins and the like. 3,848,311, Cl. 29-160.600.

Fast Load Control, Inc.: *See—*
Park, Robert H., 3,849,666.

Fattore, Vittorio: *See—*
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Feldhaus, James F.: *See—*
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Feldman, Martin Louis; Hagedorn, Donald William; and Gordon, John Edson, to American Cyanamid Company. Trisodium-monoaniline salt of 2-naphthol-3,6-disulfonic acid. 3,849,483, Cl. 260-501.210.

Feldman, Rubin, to T.S.I., Inc. Thermal protective process and article coated with thermal protective composition. 3,849,178, Cl. 117-72.000.

Fell, Charles Raymond. Apparatus for machining logs. 3,848,647, Cl. 144-3.00r.

Ferment, George R.; Prince, Arthur E., Jr.; and Sessa, Paul A., to Celanese Corporation. Process for drawing polybenzimidazole fibrous materials. 3,849,529, Cl. 264-85.000.

Fernandes, Harold, to Du Pont de Nemours, E. I., and Company. Process employing catalyst-coated yarn processing rolls. 3,849,177, Cl. 117-71.00r.

Ferrand, Bernard; Forrat, Francis; Grange, Yves; Joubert, Jean-Claude; and Mareschal, Jean, to Commissariat a l'Energie Atomique. Method of preparation of single crystal films. 3,849,193, Cl. 117-235.000.

Ferranti Limited: *See—*
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Swynford-Lain, Richard, 3,849,776.

Ferris, Walla L.: *See—*
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Ferro Corporation: *See—*
Mimeault, Victor J., 3,849,152.

Fetscher, Charles A.; and Rosso, Michael J., to Dexter Corporation, The. Encapsulant compositions for semiconductors. 3,849,187, Cl. 117-201.000.

Fetscher, Charles A.; and Schweyen, Paul R., to Dexter Corporation. Molding compounds from hexahydrophthalic anhydride, triglycidyl isocyanaurate and a polyol. 3,849,383, Cl. 260-75.00n.

Fetty, Warren Newton; Knerr, Richard Parke; Gillespie, Richard Lee; and Bettencourt, Pierre Andre, to Wham-O Manufacturing Company. Water squirt toy with protective sleeve. 3,848,808, Cl. 239-327.000.

Feuillade, Georges; and Cord, Paul, to Compagnie Generale d'Electricite. Electrochemical generator with a zinc electrode. 3,849,199, Cl. 136-30.000.

Feustel, James R.; Hoyt, Kenneth L.; and Valukonis, Jonas, to Ford Motor Company. Body support and impact absorbing frame system for a motor vehicle. 3,848,886, Cl. 280-106.00r.

Ficklinger, Thomas Franklin; Jeter, Watt Nixon; and Likhyani, Kewal Krishan, to Du Pont de Nemours, E. I., and Company. Apparatus for mixing quickly reactive materials. 3,849,074, Cl. 23-285.000.

Fields, Ellis K., to Standard Oil Company. Process for coupling organic molecules. 3,849,274, Cl. 204-158.00r.

Fields, Richard W., to Velsicol Chemical Corporation. Method of retarding the regrowth on trees. 3,849,108, Cl. 71-88.000.

Filippov, Vladimir Ivanovich; and Sumarokov, Mikhail Vasilievich. Device for burning liquid combustible wastes. 3,849,059, Cl. 431-331.000.

Findlay, John A. Process for preparing methyl and ethyl 3,11-dimethyl-7-ethyltrideca-2,6,10-trienoates. 3,849,455, Cl. 260-410.90r.

Finkl, A., & Sons Company: *See—*
Finkl, William F., 3,849,125.

Finkl, William F., to Finkl, A., & Sons Company. Method of sulphur addition fume control. 3,849,125, Cl. 75-53.000.

Finley, Joseph Burton, to Du Pont de Nemours, E. I., and Company. Viscosity-stable chloroprene sol polymer. 3,849,372, Cl. 260-45.95r.

Finn, Joseph F.: *See—*
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Firestone Tire & Rubber Company, The: *See—*
Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,849,231.

Fischer, Adolf: *See—*
Mangold, Dietrich; Fischer, Adolf; Rohr, Wolfgang; and Hamprecht, Gerhard, 3,849,467.

Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Herbicide. 3,849,107, Cl. 71-92.000.

Fischer, David L.: *See—*
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Fisher, Eugene Jay: *See—*
Lloyd, Keith Andrew; and Fisher, Eugene Jay, 3,849,333.

Fisher, John F.; and Zeller, Burton S., to Clark Equipment Company. Fluid pressure modulator and system. 3,848,620, Cl. 137-116.300.

Fisher, Julian Vernon, to Illinois Tool Works, Inc. Switch holder and actuating apparatus in a hinged closure appliance. 3,849,615, Cl. 200-61.810.

Fives-Cail Babcock: *See—*
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Vaillant, Christian; and Menissez, Jean-Pierre, 3,848,818.

Flachglas AG Delog-Detag: *See—*
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Flachglas Aktiengesellschaft: *See—*
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Flachglas Aktiengesellschaft DELOG-DETAG: *See—*
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Flagge, Bruce. Electro-mechanical sine/cosine generator. 3,849,720, Cl. 322-96.000.

Flaherty, James H. Green pellet sizing screen. 3,848,744, Cl. 209-393.000.

Flannery, James E.: *See—*
Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., 3,849,097.

Flavell, Evan R. Proportioned resistance exercise servo system. 3,848,467, Cl. 73-379.000.

Fleck, Fritz: *See—*
Basel, Horst Aebli; Fleck, Fritz; Littlewood, Peter Stuart; and Mercer, Alec Victor, 3,849,406.

Fleishman, Seymour. Disposable tongs. 3,848,906, Cl. 294-1.00r.

Flesch, Keith E., to Eckrich, Peter & Sons, Inc. Slice receiving platter for slicing apparatus. 3,848,491, Cl. 83-77.000.

Flockenhaus, Claus; Simonis, Wolfgang; Beck, Kurt-Gunther; and Echterhoff, Heinrich, to Didier-Kellogg Industrieanlagenbau GmbH. Recuperative coke oven. 3,849,258, Cl. 202-140.000.

Flodell, Bertil G. Device for supplying an object propelled along a rail or the like with electrical current. 3,848,712, Cl. 191-30.000.

Florists' Transworld Delivery Association: *See—*
Messmer, James I., 3,848,358.

Floyd, Donald W.: *See—*
Powell, Harry C., Jr.; and Floyd, Donald W., 3,849,195.

Fluck, Josef; Schaller, Kurt; and Zaugg, Roland, to Schild, A., S.A. Control mechanism for watch movements. 3,848,400, Cl. 58-68.000.

Flynn, John, to Honeywell Inc. Detector array. 3,849,678, Cl. 307-311.000.

FMC Corporation: *See—*
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Culbertson, George W., 3,848,717.
Hills, William A., 3,849,522.

Fokker, Herman: *See—*
Michels, Albertus Peter Johannes; Van Beukering, Henricus Cornelis Johannes; Fokker, Herman; and Meijer, Roelf Jan, 3,848,412.

Foley, Charles W., to General Motors Corporation. Closure latch assembly. 3,848,909, Cl. 292-216.000.

Folsom, Max H., to National Appliance Company. Method and apparatus for controlling gaseous environment. 3,848,569, Cl. 119-37.000.

Fong, Jaan-Jiue: *See—*
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Fontaine, Jean: *See—*
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Ford Motor Company: *See—*
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Forrest, Sanford I. Expandable garment waistband. 3,848,269, Cl. 2-237.000.

Forster, Denis, to Monsanto Company. Preparation of amines from amine salts. 3,849,496, Cl. 260-583.00n.

Forster, Johannes; Bezold, Karl-Heinz; and Neihage, Helmut, to Licentia Patent-Verwaltungs GmbH. Method for controlling a recitifier circuit with controlled rectifiers and associated quenching devices. 3,849,718, Cl. 321-40.000.

Fort Lock Corporation: *See—*
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Fortuna-Werke Maschinenfabrik AG: *See—*
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Forval-Verkaufsgesellschaft H. Durkop & Co.: *See—*
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Foseco International Limited: *See—*
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Foshaug, Rockne H.: *See—*
Dehlbom, Eugene K.; and Foshaug, Rockne H., 3,848,450.

Foster, Betty J.; and Tummala, Rao R., to International Business Machines Corporation. Dielectric glass overlays and method for producing said glass compositions. 3,849,190, Cl. 117-219.000.

Foster, John R.; Zawadzki, George Z.; and Godec, Maksimiljan, to Von Duprin, Inc. Conductor transfer assembly. 3,848,361, Cl. 49-167.000.

Foster, Karl, to Westinghouse Electric Corporation. Cold roller leveling treatment of cube oriented silicon steel to remove coil set. 3,849,214, Cl. 148-111.000.

Fowells, Robert W.; Damon, Robert A.; and Coma, James G. Process of forming polyolefin fibers. 3,849,387, Cl. 260-94.90b.

Fowler, Alan Bicksler, to International Business Machines Corporation. Process for the elimination of interface states in MIOS structures. 3,849,204, Cl. 148-1.500.

Fox, John William, to Project Laboratories Limited. Inflatable safety belt. 3,848,887, Cl. 280-150.0ab.

Fox Pool Corporation: *See—*
Witte, Donald H., 3,848,378.

Fraim, Raymond A.: *See—*
Bartles, Edward C.; and Fraim, Raymond A., 3,848,342.

France Bed Co., Ltd.: *See—*
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Franchi, Luigi, S.p.A.: *See—*
Zanoni, Ernesto, 3,848,511.

Frank, Erich: *See—*
Kessler, Gustav; Frank, Erich; and Laumann, Volker, 3,849,232.

Franklin Electric Co., Inc.: *See—*
Streater, August L., 3,849,704.

Franklin Mint Corporation: *See—*
Kirkham, Kathleen E., 3,848,312.

Franklin, Paul R., Jr. Holdover cooling unit. 3,848,429, Cl. 62-439.000.

Franz, Henry H. Container filling apparatus. 3,848,645, Cl. 141-117.000.

Fraser, Lawrence J., to Xerox Corporation. Line charge toner cleaning. 3,848,994, Cl. 355-15.000.

Fratmann S.A.: *See—*
Denzler, Eric-Alain, 3,849,442.

Freedman, David Daniel, to RCA Corporation. High speed programmable counter. 3,849,635, Cl. 235-92.0cc.

French, Tom, to Dunlop Limited. Tire tread having drainage chambers. 3,848,651, Cl. 152-209.000.

Frey, Otto, to Sulzer Brothers Ltd. Shank for bone implants. 3,848,273, Cl. 3-1.000.

Frick, John G., Jr.; and Gautreaux, Gloria A., to United States of America, Agriculture. Method of increasing covering power of knitted cotton fabric. 3,849,066, Cl. 8-115.500.

Fridrich, Elmer G., to General Electric Company. Optical system for providing uniform exposure of a photosensitive surface. 3,848,983, Cl. 354-1.000.

Fried, Henry B., to Bulova Watch Company, Inc. Watch movement holder. 3,848,484, Cl. 81-6.000.

Fried, John H.: *See—*
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,849,565.

Fried. Krupp Gesellschaft mit beschankter Haftung: *See—*
Hartwig, Jurgen; Scheffler, Ulrich; and Ulrich, Klaus-Herbert, 3,849,269.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Helms, Horst, 3,849,636.

Frieling, Teunis; and Bruggencate, Teunis Ten, to Stichting Ontwikkeling Verpakkingsmethaden In de Zuivelindustrie. Method for score sealing a foam plastic container. 3,849,227, Cl. 156-268.000.

Frielingsdorf, Hans; Mueller-Tamm, Heinz; Hoehr, Lothar; and Kolk, Erich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of particulate catalyst compositions for the polymerization of olefins. 3,849,334, Cl. 252-429.00b.

Frisch, Kurt C.; and Ashida, Kaneyoshi. Polyisocyanurate foam and process for producing the same. 3,849,349, Cl. 260-2.5aw.

Frisco, John S.: *See—*
Degginger, Edward R.; and Frisco, John S., 3,848,802.

Frohbach, Hugh F., to Stanford Research Institute. Electromechanical sweep generating system with the utilization of photocells. 3,849,698, Cl. 315-367.000.

Frohlich, Alfons, to Opti-Holding AG. Slide fastener. 3,848,298, Cl. 24-205.10r.

Fruhwald, John M.: *See—*
Johnson, Richard A.; and Fruhwald, John M., 3,849,706.

Fryback, Melbourne G., to Sun Oil Company of Pennsylvania. Device for injecting a fluid into a fluidized bed of particulate material. 3,848,811, Cl. 239-552.000.

Fryer, Rodney: *See—*
Coffen, David; and Fryer, Rodney, 3,849,399.

Fryer, Rodney Ian: *See—*
Coffen, David Llewellyn; and Fryer, Rodney Ian, 3,849,434.

Fuchs, Hugo; Ricker, Ernst; Schmidt, Franz; Schwartz, Erich; and Sperber, Heinrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of butanedioiformal. 3,849,444, Cl. 260-338.000.

Fuchs, Rudolf; and Glieschke, Kurt, to Akzona Incorporated. Nip roll assembly for stuffer box crimping device. 3,848,300, Cl. 28-1.600.

Fuhr, Werner: *See—*
Zirngibl, Hans; Fuhr, Werner; Jaschinski, Klemens; Beumer, Peter; and Weidmann, Walter, 3,849,543.

Fuhrmann, Robert; Koff, Fred W.; and Pisanchyn, John, to Allied Chemical Corporation. Hydrogenation of lysine precursors. 3,849,481, Cl. 260-501.170.

Fuji Denka Seizo Kabushiki Kaisha Kawasaki-Shi: *See—*
Miyamaoto, Nobuyuki; Nakamura, Kyosuke; and Nittani, Osamu, 3,849,268.

Fuji Photo Film Co., Ltd.: *See—*
Hibino, Noburo; Seto, Kunihira; Kobayashi, Teruo; and Inoue, Kazuo, 3,849,139.
Iwano, Haruhiko; Tanaka, Mitsugu; Otsuki, Tesuo; and Arai, Atsuaki, 3,849,133.
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Fujii, Yozo: *See—*

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Fujikawa, Kanichi: *See—*
Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.

Fujikawa, Tetsuzo; Kawano, Masahisa; and Yamamoto, Masaru, to Kawasaki Jyukogyo Kabushiki Kaisha. Combustion promoting improvement in rotary engine. 3,848,574, Cl. 123-8.090.

Fujimoto, Hiroshi: *See—*
Matsui, Akio; Hasegawa, Yuji; and Fujimoto, Hiroshi, 3,849,356.

Fujimoto, Yoshiji: *See—*
Endou, Hirohide; Kawasaki, Jun; Fujimoto, Yoshiji; Nakane, Keiichi; and Kitazume, Yoshiaki, 3,849,760.

Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, to Hitachi, Ltd. Digital information processing apparatus for pattern recognition. 3,849,762, Cl. 340-146.30q.

Fujitsu Limited: *See—*
Takagi, Mikio; Nakayama, Kazufumi; Terada, Chiaki; and Kamioka, Hajime, 3,849,270.

Fujiwara, Huygene K.: *See—*
Blagdon, Peter A.; Malzahn, Wayne R.; and Fujiwara, Huygene K., 3,849,582.

Fujiwra, Keniti: *See—*
Kasahara, Masao; Namekawa, Toshihiko; Fujiwra, Keniti; Hirasawa, Shigeiti; and Sugiyama, Yasuo, 3,849,761.

Fukuda, Tadaji: *See—*
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Fukuda, Tsuguo: *See—*
Uematsu, Yutaka; and Fukuda, Tsuguo, 3,849,667.

Fukushima, Yasuo, to Toko Inc. Toroidal coil winding machine. 3,848,819, Cl. 242-4.00b.

Fuller, George A., Jr.; Langevin, Wilfred L.; Lutts, Carlton G.; and Neiley, Geoffrey C., Jr., to USM Corporation. Machines for stacking limp work pieces. 3,848,866, Cl. 271-180.000.

Fulton Boiler Works, Inc.: *See—*
Palm, Lewis J.; and Palm, Ronald B., 3,848,661.

Fulton, Douglas William: *See—*
Brock, Alan James; and Fulton, Douglas William, 3,849,639.

Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for preparing purified normal paraffins. 3,849,298, Cl. 208-310.000.

Funakubo, Toshiei, to Kabushiki-Kaisha Eishin. Hole saw. 3,848,687, Cl. 175-394.000.

Furuya, Tadashi, to Nippon Electric Company, Limited. Base-band delay equalizer. 3,849,744, Cl. 333-28.00r.

Fuziya, Shigeru: *See—*
Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, 3,849,590.

G & H Technology, Inc.: *See—*
McCormick, Larry L.; and Selk, Ben F., 3,848,950.

Gade, John N.; and MacKay, James D., to Eastman Kodak Company. Scroll winding and loading apparatus. 3,848,315, Cl. 29-200.00b.

Gaggrave, Robert J., to Dayton Progress Corporation. Die apparatus. 3,848,452, Cl. 72-448.000.

Gainer, John L.: *See—*
Kirwan, Donald J.; and Gainer, John L., 3,849,254.

Galbreath, Gerald W.: *See—*
Linhart, James T.; Crosswell, Flay D.; and Galbreath, Gerald W., 3,848,920.

Galisz, Laszlo; and Vali, Miklos. Rotary barbecue device. 3,848,523, Cl. 99-421.00h.

Gallay, Jean-Jacques; Bosshard, Rene; and Brenneisen, Paul, to Ciba-Geigy Corporation. Isothiocyanobenzazoles. 3,849,431, Cl. 260-306.60r.

Gan, Ramat: *See—*
Teitelbaum, Dvora; Gan, Ramat; Meshorer, Asher; Hirshfeld, Tsvi; Arnon, Ruth; and Sela, Michael, 3,849,550.

Ganz, Robert H. Packaging machine. 3,848,519, Cl. 93-53.0sd.

Gapp, Roland Howard; Alazraki, Marcos Daniel; and Harper, John, to Textron, Inc. Bimetal rivets. 3,848,389, Cl. 52-758.00d.

Garber, John W., Jr. Aquarium. 3,848,567, Cl. 119-5.000.

Garcin, Georges, to Ste. Nouvelle de Roulements (S. N. R.). Work feed devices for centreless grinding machines. 3,848,370, Cl. 51-237.000.

Gardineer, Bayard G.; and Panissidi, Hugo A., to International Business Machines Corporation. Linear hydraulic drive system. 3,848,515, Cl. 91-184.000.

Gardner-Denver Company: *See—*
Baker, William J.; Bos, John R.; and Klemm, Robert W., 3,848,789.

Garfinkel, Marvin: *See—*
Cordes, Linus F.; and Garfinkel, Marvin, 3,849,789.

Gargrave, Robert J.; and Holiga, Ludomil A., to Dayton Progress Corporation. Press adapter system for standardizing die use. 3,848,494, Cl. 83-109.000.

Garrison, Clarence A.: *See—*
Peck, Clifford S.; and Garrison, Clarence A., 3,849,057.

Garza, Adan C.; and Bavisotto, Vincent S., to Brewer's Unlimited, Inc. Apparatus for and method of determining oxygen and carbon dioxide in sealed containers. 3,849,070, Cl. 23-230.00r.

Gau, Georges, to Agence Nationale de Valorisation de la Recherche (Anvar). Method for separating hydrocarbons especially aromatic hydrocarbons and installations therefor. 3,849,261, Cl. 203-38.000.

Gauronski, John F., to Xerox Corporation. Copier/duplicator system. 3,848,995, Cl. 355-26.000.

Gautreaux, Gloria A.: *See—*
Frick, John G., Jr.; and Gautreaux, Gloria A., 3,849,066.

Geary, Milford. Fuselage flaps for an aircraft. 3,848,831, Cl. 244-45.00r.

Gebauer, Herbert: *See—*
Dhein, Rolf; Rudolph, Hans; Kreuder, Hans-Joachim; and Gebauer, Herbert, 3,849,160.

Gebhardt, Richard. Stow roller train for cargo. 3,848,727, Cl. 198-127.000.

Gebr. Schmeing: *See—*
Meyering, Otto; and Langenhoff, Hubert Heinrich, 3,848,644.

Gebrude Phetscher: *See—*
Pletscher, Oskar, 3,848,373.

Gedde, Ove Christopher. Process for electrolytically colouring of aluminum which has previously been anodically oxidized. 3,849,263, Cl. 204-35.00n.

Geesaman, Noah Gene; and Geesaman, Vivian B. Rotatable silverware holder. 3,848,943, Cl. 312-284.000.

Geesaman, Vivian B.: *See—*
Geesaman, Noah Gene; and Geesaman, Vivian B., 3,848,943.

Gegenheimer, Harold W.; Siebein, Walter A.; and Hancock, George J., to Baldwin-Gegenheimer Corporation. Ink level control system. 3,848,529, Cl. 101-363.000.

Geiersbach, Allois F.; and Gilmore, Thomas P., to Allis-Chalmers Corporation. Power rectifier having phase control angle of firing signals independent of supply frequency variation. 3,849,719, Cl. 321-69.00r.

Geisco Associates: *See—*
Cofek, Henry R., 3,849,004.

Geisler, Roland; and Konic, Wilhelm, to Neuhausser KG and Bergwerksverband GmbH. Concrete-displacement apparatus. 3,848,810, Cl. 239-417.300.

Gemmer France: *See—*
Bourdon, Julien Louis, 3,849,009.

Gendin, Gennady Semenovich. Earphone with frequency correction. 3,849,602, Cl. 179-1.00d.

General Cable Corporation: *See—*
Schmidt, Gertraud A., 3,849,192.

General Electric Company: *See—*
Bayer, Eric W., 3,849,752.
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General Motors Corporation: *See—*
Amann, Charles A.; and Ricketts, James M., 3,849,022.
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General Signal Corporation: *See—*
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General Tire & Rubber Company, The: *See—*
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Gensler, Edwin G.: *See—*
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Georgia Tech Research Institute: *See—*
Bowen, Mack D., 3,848,550.

Georgopoulos, Christos J.; and Ross, Charles R., to Raytheon Company. Digital data transmission system. 3,849,672, Cl. 307-235.000.

Gerace, Robert Eugene: *See—*
Abowitz, Gerald; Ruckdeschel, Frederick Robert; and Gerace, Robert Eugene, 3,849,628.

Gerardus, Henricus Wijnandus; and Overgoor, Bernardus Josephus Marie, to U.S. Philips Corporation. Wide-band differential amplifier. 3,849,735, Cl. 330-30.00d.

Gerber Farment Technology, Inc.: *See—*
Arel, Roger R., 3,848,490.

Gerber Garment Technology, Inc.: *See—*
Gerber, Heinz Joseph; and Pearl, David Raymond, 3,848,327.

Gerber, Heinz Joseph; and Pearl, David Raymond, to Gerber Garment Technology, Inc. Apparatus for working of sheet material. 3,848,327, Cl. 29-559.000.

Gerber Scientific Instrument Company, The: *See—*
Webster, Ronald B.; and Rich, Leonard G., 3,848,520.

Gerken, Roman: *See—*
Anderson, William S.; and Gerken, Roman, 3,848,390.

Germershausen, Raimund: *See—*
Scheipner, Robert Hans; Schlussler, Helmut; and Germershausen, Raimund, 3,848,464.

Geurts, Melle F.: *See—*
McArthur, Ralph F.; and Geurts, Melle F., 3,849,030.

Gewerkschaft Schalker Eisenhuette: *See—*
Pankow, Horst, 3,849,058.

Ghibu, Michael; Bohn, Gerhard; and Schwarzler, Peter, to Krauss-Maffei Aktiengesellschaft. Method and apparatus for measuring the gap spacing and relative transverse displacement of an electromagnetic core from an armature using magnetic field sensors. 3,89,724, Cl. 324-34.00d.

Ghys, Theofiel Hubert: *See—*
Jeurissen, Lambert Gaston; Bollen, Romain Henri; Ghys, Theofiel Hubert; and Heylen, Renaat Frans, 3,849,658.

Giandinoto, Aldo; and Gilardelli, Ugo, to Fabbrica Italiana Magneti Marelli, S.p.A. Device for guiding and resuming the axial clearance in screws of reduction worms, particularly for low power geared motor. 3,848,477, Cl. 74-425.000.

Giardina, Angelo R., to Westinghouse Electric Corporation. Steam generator. 3,848,572, Cl. 122-32.000.

Gibs, Gabriel Joseph: *See—*
Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, 3,849,441.

Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., to Corning Glass Works. Method for continuously hot forming strong laminated bodies. 3,849,097, Cl. 65-33.000.

Gilardelli, Ugo: *See—*
Giandinoto, Aldo; and Gilardelli, Ugo, 3,848,477.

Gilbert, Everett E.: *See—*
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Gilch, Heinrich: *See—*
Michael, Dietrich; Gilch, Heinrich; and Hechelhammer, Wilhelm, 3,849,154.

Gill, Devinder S.: *See—*
Maitlis, Peter M.; White, Colin; Kang, Jung W.; and Gill, Devinder S., 3,849,459.

Gillespie, Richard Lee: *See—*
Fetty, Warren Newton; Knerr, Richard Parke; Gillespie, Richard Lee; and Bettencourt, Pierre Andre, 3,848,808.

Gilliatt, Charles L., to Raytheon Company. Microwave heating apparatus. 3,849,623, Cl. 219-10.550.

Gilman, Harold: *See—*
Stein, Theodore W.; Gilman, Harold; and Bobeck, Richard L., 3,849,451.

Gilmer, Thomas P., Jr., to Lectrosonics, Inc. Carrying case for PA system with stowed lectern. 3,848,944, Cl. 312-314.000.

Gilmore, Thomas P.: *See—*
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Gilster, Kenneth W.: *See—*
Porter, James M.; Loweth, Carl V.; and Gilster, Kenneth W., 3,848,430.

Gingerich, Leo L.: *See—*
Doss, Richard C.; and Gingerich, Leo L., 3,849,381.

Ginn, Arthur H., to International Packings Corporation. High pressure seal. 3,848,881, Cl. 277-181.000.

Giorgi, Lewis A. Color correcting process. 3,849,153, Cl. 117-2.00r.

Girard, Andre; and Laurent, Jean, to Office National d'Etudes et de Recherches (O.N.E.R.A.). Method and device for estimating a gaseous component. 3,849,005, Cl. 356-201.000.

Girling Limited: *See—*
Cochrane, Robin Adam, 3,848,619.

Giuffredi, Giancarlo, to Costa Tecnologie Speciali S.p.A. Device for placing and seam folding the bottoms of supply valves on aerosol containers. 3,848,318, Cl. 29-208.00b.

Glass, Marvin, & Associates: *See—*
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Morrison, Howard J., 3,848,869.

Glaxo Laboratories Limited: *See—*
Mead, Robert James, 3,849,569.

Gleim, William K. T.; and O'Hara, Mark J., to Universal Oil Products Company. Coal liquefaction process. 3,849,287, Cl. 208-8.000.

Gleim, William K. T., to Universal Oil Products Company. Process for the conversion of heavy hydrocarbon charge stocks. 3,849,292, Cl. 208-111.000.

Glieschke, Kurt: *See—*
Fuchs, Rudolf; and Glieschke, Kurt, 3,848,300.

Glockner, Hans: *See—*
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Glover, Charles J.: *See—*
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Glover, Ernest Edward: *See—*
Jack, David; and Glover, Ernest Edward, 3,849,557.

Gmeiner, Gunter: *See—*
Wilfert, Karl; Gmeiner, Gunter; Grabner, Christian; and Nockemann, Ernst, 3,848,910.

Gobble, Glenn R.; and Loebs, Richard G., to Caterpillar Tractor Company. Sealing ring of stainless iron base alloy. 3,849,078, Cl. 29-183.000.

Gobble, Glenn R.; and Loebs, Richard G., to Caterpillar Tractor Company. Stainless iron base alloy metal-to-metal high speed seals. 3,849,122, Cl. 75-126.00a.

Godec, Maksimiljan: *See—*
Foster, John R.; Zawadzki, George Z.; and Godec, Maksimiljan, 3,848,361.

Goding, Justin Christian, to Xerox Corporation. Photocomposing apparatus. 3,848,996, Cl. 355-43.000.

Goele, Dhruv. Lady's belt. 3,848,271, Cl. 2-338.000.

Golborn, Peter; and Duffy, James J., to Hooker Chemical Corporation. Imidomethyl phosphonates. 3,849,440, Cl. 260-326.50a.

Gold, Paul A.: *See—*
Adler, Norman; Morgenthau, John L., Jr.; and Gold, Paul A., 3,848,773.

Goldsworthy Engineering, Inc.: *See—*
Karlson, Harald E., 3,848,405.

Goncharoff, Nikolai, to Motorola, Inc. Volume and tone controls for multichannel audio systems. 3,849,601, Cl. 179-1.00d.

Gondo, Hisashi: *See—*
Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, 3,849,209.

Goodacre, Cecil; and Leggett, Peter Alfred, to Lansing Bagnall Limited. Industrial lift trucks. 3,848,759, Cl. 214-730.000.

Goodell, John B., to Westinghouse Electric Corporation. Apparatus for measuring and controlling annulus diameters of images formed by a pincushion lens. 3,848,970, Cl. 350-189.000.

Goodrich, B. F., Company, The: *See—*
Kuts, Mathew, 3,848,501.
Morningstar, Marion G., 3,849,179.

Goodwin, Charles W., to PMCS Company, Inc. Interlocking bucking hinge and ladder combination. 3,848,699, Cl. 182-163.000.

Gordon, John. Pipe belling machine. 3,849,052, Cl. 425-387.000.

Gordon, John Edson: *See—*
Feldman, Martin Louis; Hagedorn, Donald William; and Gordon, John Edson, 3,849,483.

Goretzki, Jerome A.; Hendrickson, Kenneth E.; Mattson, Gary L.; and Mattson, Larry F., to International Business Machines Corporation. Stepper motor control system. 3,849,714, Cl. 318-685.000.

Gothberg, Yngve Roland, to Kommanditbolaget United Stirling (Sweden) AB & Co. Hot gas engine power control device. 3,848,413, Cl. 60-525.000.

Goto, Yasuhide: *See—*
Suzuki, Kensuke; Goto, Yasuhide; Iwasaki, Kazunari; and Sumitomo, Yoshiharu, 3,849,188.

Gottsmann, Hartmut; and Specovius, Joachim, to Licentia Patent-Verwaltungs-GmbH. Laser and method of making same. 3,849,790, Cl. 357-18.000.

Gould, Francis E.: *See—*
Shepherd, Thomas H.; and Gould, Francis E., 3,849,185.

Gould, Francis E.; and Ronel, Samuel H. Artificial skin. 3,849,238, Cl. 161-159.000.

Gould, Ronald R.: *See—*
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Grabner, Christian: *See—*
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Grace, W. R., & Company: *See—*
Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., 3,849,169.
Wendler, Kenneth T.; and Daniels, David A., 3,849,322.

Graham, Joseph A., Jr. Towel warmer. 3,849,629, Cl. 219-342.000.

Grain Processing Corporation: *See—*
Egger, Carl T.; and Olson, Robert E., 3,849,391.

Grand, Paul Sheldon, to Colgate-Palmolive Company. Cosmetic compositions. 3,849,548, Cl. 424-70.000.

Grange, Yves: *See—*
Ferrand, Bernard; Forrat, Francis; Grange, Yves; Joubert, Jean-Claude; and Mareschal, Jean, 3,849,193.

Grant, Norman H.: *See—*
McGregor, William H.; and Grant, Norman H., 3,849,390.

Grantt, David Lawrence; Stone, Dan Frederick; and Townsend, Timothy Joseph, said Grantt and Townsend assors. to said Stone, Dan Frederick. Insulated container pack. 3,848,766, Cl. 220-9.00f.

Graphic Controls Corporation: *See—*
Hubbard, James R., 3,849,143.

Grass Instrument Company: *See—*
Grass, Robert W., 3,849,734.

Grass, Robert W., to Grass Instrument Company. Signal processing apparatus. 3,849,734, Cl. 330-30.00d.

Gray, Ernest F. Jewelry clasp. 3,848,299, Cl. 24-230.0sc.

Gray, Theodore F., Jr.; and Barton, Kenneth R., to Eastman Kodak Company. Block polyester-polyamide copolymers. 3,849,514, Cl. 260-857.0pe.

Grebe, Kurt R., to International Business Machines Corporation. Masking of deposited thin films by use of a masking layer photoresist. 3,849,136, Cl. 96-36.200.

Greczin, John. Bobbin mounting disc. 3,848,433, Cl. 66-125.00r.

Green, James Ralph, to Du Pont de Nemours, E. I., and Company. Product and process. 3,849,181, Cl. 117-106.00r.

Green, Max L., to Relton Corporation. Apparatus for cutting holes in porcelainized metal. 3,849,019, Cl. 408-142.000.

Greene, James E., Jr., to Westinghouse Electric Corporation. Channel delay checkback apparatus. 3,849,763, Cl. 340-147.00r.

Greer, David L., to General Electric Company. Segmented associative logic circuits. 3,849,638, Cl. 235-152.000.

Greiner, James H., to International Business Machines Corporation. Process for forming reactive layers whose thickness is independent of time. 3,849,276, Cl. 204-192.000.

Grenci, Carl A. Valving machine. 3,848,485, Cl. 81-57.110.

Gresen Manufacturing Company: *See*—
Ohnesorge, Ralph R., 3,849,034.

Greven, Hendrik Marie: *See*—
Rittel, Werner; Brugger, Max; Kamber, Bruno; Riniker, Bernhard; Sieber, Peter; and Greven, Hendrik Marie, 3,849,388.

Grey, David S., to Polaroid Corporation. Compact seven element zoom lens with optical compensation. 3,848,967, Cl. 350-184.000.

Grey, David S., to Polaroid Corporation. Compact eight element zoom lens with optical compensation. 3,848,968, Cl. 350-184.000.

Griffin, Richard J. Combination protective cap and stand for a pressurized gas cylinder. 3,848,768, Cl. 220-85.00p.

Griffith, James R.: *See*—
O'Rear, Jacques G.; and Griffith, James R., 3,849,450.

Griffiths, Darrell J. L.; and Huang, Denis K., to Westvaco Corporation. Urea formaldehyde pigment. 3,849,378, Cl. 260-69.00r.

Groom Lemuel D., III; and Jordan, Lavell, Jr., to Texas Instruments Incorporated. Fast rise time oscillator. 3,849,741, Cl. 331-165.000.

Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Hydraulic unit for a braking mechanism provided with an anti-locking system. 3,848,934, Cl. 303-21.00f.

Grot, Walther Gustav, to Du Pont de Nemours, E. I., and Company. Laminated of support material and fluorinated polymer containing pendant side chains containing sulfonyl groups. 3,849,243, Cl. 161-189.000.

Groth, Rolf, to Flachglas Aktiengesellschaft DELOG-DETAG. Heat-reflecting laminated safety glass pane. 3,849,244, Cl. 161-199.000.

Groundahl, Clayton M., to General Electric Company. Serpentine cooling channel construction for open-circuit liquid cooled turbine buckets. 3,849,025, Cl. 416-97.000.

Grove, Lloyd E.: *See*—
Scott, Kelley E., Jr.; Kemper, Daryl M.; Grove, Lloyd E.; and Kiess, Ronald J., 3,849,681.

Grow, Harlow B. Non-stop rapid transit system. 3,848,533, Cl. 104-18.000.

Gruber, Leon Lester, to RCA Corporation. Method of directly spacing a cathode-to-grid assembly for a cathode-ray tube. 3,848,301, Cl. 29-25.160.

Grundner, Warren Thorne, to Sybron Corporation. Polyalklene polyamine-aldehyde-ketone condensation polymer flocculants and retention aids. 3,849,307, Cl. 210-54.000.

Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; and Aladyshev, Sergei Ivanovich. Catalytic reactor for carrying out conjugate chemical reactions. 3,849,076, Cl. 23-288.00r.

GTE Sylvania Incorporated: *See*—
Cosco, Robert J.; and Pappas, John A., 3,849,690.
Huston, Leroy S.; and Kulik, Joseph S., Jr., 3,849,687.
Roche, William J., 3,849,699.

Guglielmetti, Leonardo: *See*—
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,849,163.

Guimard, Lucien: *See*—
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Gulf & Western Manufacturing Company (Hastings): *See*—
Pim, Norman L., 3,848,472.

Gulf States Asphalt Co. Inc.: *See*—
Spillane, Leo J.; Alexander, Stephen H.; and Bramble, Reba H., 3,849,229.

Gulf States Paper Corporation: *See*—
Seith, Robert E.; and Bundy, Otto M., 3,848,359.

Gullick Dobson Limited: *See*—
Allen, Archelaius Dawson; and Small, Fred, 3,848,420.

Gupta, Asoka, to Indian Iron & Steel Company Limited, The. Pelletising haematite iron ore fines. 3,849,112, Cl. 75-3.000.

Gurevich, Samuil Mordkovich; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Manoilo, Sergei Afanasievich; and Kykhno, Semen Leonidovich. Flux for welding refractory and non-ferrous metls. 3,849,211, Cl. 148-26.000.

Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See*—
Rumping, Stephanus Nicolaas Hendrick, 3,848,861.

Gutnick, Morton. Abortion facilitating device and process. 3,848,602, Cl. 128-344.000.

Guyonnet, Jean-Francis, to Centre National de Recherche Scientifique. Friction armature with friction and magnetic linings. 3,848,313, Cl. 29-191.200.

Gwynne, Thomas, to BPB Industries Limited. Cementitious building board with edge reinforcing strips. 3,849,235, Cl. 161-44.000.

Haag, Werner O.; and Whitehurst, Darrell Duayne, to Mobil Oil Corporation. Preparation of carboxylic acids by hydrogenolysis of esters. 3,849,457, Cl. 260-413.000.

Haas, Werner E. L.: *See*—
Adams, James E., Jr.; and Haas, Werner E. L., 3,848,965.

Habecker, John W., to Cherry Electrical Products Corporation. Illuminated push-button switch. 3,849,621, Cl. 200-310.000.

Hach Chemical Company: *See*—
Hach, Clifford C., 3,849,002.

Hach, Clifford C., to Hach Chemical Company. Method and apparatus for eliminating air during fluid turbidity measurement. 3,849,002, Cl. 356-103.000.

Hack, Peter: *See*—
Deneke, Klaus; Falkenhain, Wilhelm; and Hack, Peter, 3,849,532.

Haertle, Richard J., to Kleen Test Products, Inc. Method of forming an applicator construction. 3,849,225, Cl. 156-213.000.

Hafner, Joseph A., 1/2 to Hamilton, John, Hamilton, Cuddle and 1/2 to Melanson, Alcide. Extruded section and structures incorporating such section. 3,848,387, Cl. 52-735.000.

Hagedorn, Donald William: *See*—
Feldman, Martin Louis; Hagedorn, Donald William; and Gordon, John Edson, 3,849,483.

Hageman, Howard A., to Uniroyal, Inc. Sulfur-containing polyphenols. 3,849,500, Cl. 260-608.000.

Hagenbach, Robert J.: *See*—
Madrid, Robert W.; and Hagenbach, Robert J., 3,849,127.

Hagenbach, Robert J., to Xerox Corporation. Highly shape-classified oxidized low carbon hypereutectoid electrostatographic steel carrier particles. 3,849,182, Cl. 117-100.00m.

Hagino, Hiroshi: *See*—
Nakayama, Kiyoshi; and Hagino, Hiroshi, 3,849,251.

Hakansson, Sven Anders Samuel: *See*—
Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar K:Son; and Lonnberg, Lars, 3,848,877.

Hakki, Basil Wahid, to Bell Telephone Laboratories, Incorporated. Multilayer antireflection coatings for solid state lasers. 3,849,738, Cl. 331-94.50h.

Halcon International, Inc.: *See*—
Stein, Theodore W.; Gilman, Harold; and Bobeck, Richard L., 3,849,451.

Haley, Kenneth M.; Koschak, Dennis F.; Molinaro, Lawrence J.; and Reed, Richard L., to Reserve Mining Company. Adjustable, sealed roll screen for classifying and conveying material-in-process such as taconite pellets. 3,848,741, Cl. 209-106.000.

Halgas, Frank A.: *See*—
Kerfoot, Charles S.; and Halgas, Frank A., 3,849,701.

Hall, Edward L.; and Philofsky, Elliott M., to Motorola, Inc. Electromigration resistant semiconductor contacts and the method of producing same. 3,848,330, Cl. 29-590.000.

Hall, Harry H. Bench tool for sheet metal bending. 3,848,454, Cl. 72-457.000.

Hall, James Edward: *See*—
Branch, Geoffrey Hindle; and Hall, James Edward, 3,848,752.

Hall, Richard C.; Kidd, Norman D.; and Daravingas, George V., to SCM Corporation. Process for reducing pickle bloating with dehydroacetic acid. 3,849,579, Cl. 426-49.000.

Hall-Jackson, John Alan, to Rank Organisation Limited, The. Manufacture of optical apparatus. 3,849,219, Cl. 156-73.000.

Halley, David Walker; and Leather, Russell Allan, to Ferranti Limited. Electric connectors. 3,848,946, Cl. 339-17.00f.

Halliday, Kenneth David, to Pyrotenax Limited. Electric heating device. 3,849,630, Cl. 219-535.000.

Halloway, James H.; and Petersen, George E., to General Electric Company. Ultrasonic cleaning of resin. 3,849,196, Cl. 134-1.000.

Hamano, Goro, to Matsushita Electrical Industrial Co., Ltd. Programmable logic controller. 3,849,765, Cl. 340-172.500.

Hamblen, David P.; and Higgins, George C., to Eastman Kodak Company. Electro-optical display device and method. 3,849,657, Cl. 250-461.000.

Hamburg, James A.; and Whitney, Donald R., to General Motors Corporation. Noise pollution level measuring circuit. 3,848,471, Cl. 73-557.000.

Hamilton, Cuddle: *See*—
Hafner, Joseph A., 3,848,387.

Hamilton, John: *See*—
Hafner, Joseph A., 3,848,387.

Hamm, Alton B. Distance and direction recording device and method. 3,848,340, Cl. 33-354.000.

Hammel, Rudolf: *See*—
Wagner, Karl Heinz; Muellerpoths, Reiner; and Hammel, Rudolf, 3,849,618.

Hammer, Victor S.; and Brozek, Chester W., to Chicago Fittings Corporation. High pressure fitting. 3,848,905, Cl. 285-286.000.

Hamprecht, Gerhard: *See*—
Mangold, Dietrich; Fischer, Adolf; Rohr, Wolfgang; and Hamprecht, Gerhard, 3,849,467.

Hananoi, Toshihiro: *See*—
Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.

Hancock, George J.: *See*—

Gegenheimer, Harold W.; Siebein, Walter A.; and Hancock, George J., 3,848,529.
Handels, Roth, GmbH: *See*—
Hetz, Wolfgang, 3,849,533.
Haneishi, Tatsuo: *See*—
Arai, Mamoru; Haneishi, Tatsuo; Kayamori, Hisashi; Takiguchi, Yoo; Kitano, Noritoshi; and Kaneko, Susumu, 3,849,398.
Hanning, John R., to Aro Corporation, The. Pneumatic operated motor and brake for hoist. 3,848,716, Cl. 192-3.00r.
Hanscom, Genevieve I.: *See*—
Lazzarini, Louis P., 3,848,498.
Hanscom, Genevieve I., Magnuson, Robert, and Thompson, Louis J., as Trustees of the Estate of Magnuson, Roy M., deceased: *See*—
Lazzarini, Louis P., 3,848,498.
Hansen, Andrew C., to Universal Oil Products Company. Catalytic cracking process improvement. 3,849,294, Cl. 208-162.000.
Hanson, Alden B.; and Hanson, Chris A., to Hanson Industries, Inc. Ski boot with adjustable flexure means. 3,848,347, Cl. 36-2.5al.
Hanson, Chris A.: *See*—
Hanson, Alden B.; and Hanson, Chris A., 3,848,347.
Hanson Industries, Inc.: *See*—
Hanson, Alden B.; and Hanson, Chris A., 3,848,347.
Harada, Hiroshi: *See*—
Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, 3,849,298.
Harautuneian, Andrew; and Penny, William H., to American Hospital Supply Corporation. Endotracheal tube with improved inflation retention means. 3,848,605, Cl. 128-351.000.
Harder, Arthur J., Jr., to Coach and Car Equipment Corporation. Transit vehicle seat. 3,848,925, Cl. 297-452.000.
Harder, Arthur J., Jr., to Coach and Car Equipment Corporation. Slide mechanism. 3,848,937, Cl. 308-6.00r.
Harding, John W.: *See*—
Buntin, Robert R.; Keller, James P.; and Harding, John W., 3,849,241.
Hardt, Jean, to Aluminum Suisse SA. Die for shaping metals. 3,848,453, Cl. 72-467.000.
Hargash, Paul; and Karle, Franklin J., to Dow Chemical Company, The. Sample collection and delivery apparatus. 3,848,470, Cl. 73-425.600.
Harmon, William J., Jr.: *See*—
Eisenberg, Mark F.; and Harmon, William J., Jr., 3,849,702.
Harper, John: *See*—
Gapp, Roland Howard; Alazraki, Marcos Daniel; and Harper, John, 3,848,389.
Harris, Erik P.: *See*—
Braslau, Norman; Cuomo, John J.; Harris, Erik P.; and Hovel, Harold J., 3,849,707.
Harris, Frederick John; and Raitt, John Stewart, to Scottish Agriculture Industries Limited. Plant foods. 3,849,103, Cl. 71-77.000.
Harris, Gerald R. Pivotal arm band saw. 3,848,493, Cl. 83-168.000.
Harris, Melvin: *See*—
Mueller, Volkmar; Berendt, Hans-Ulrich; and Harris, Melvin, 3,849,162.
Harrison, Ian T.: *See*—
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,849,565.
Hartfelder, Gunter: *See*—
Wolf, Erhard; Kohl, Hans; and Hartfelder, Gunter, 3,849,559.
Hartley, Ezra D. Pump. 3,849,026, Cl. 417-203.000.
Hartley, James C., Jr.: *See*—
Chin, James; and Hartley, James C., Jr., 3,849,172.
Hartmann, Eduard: *See*—
Schrempp, Klaus; Jettmar, Werner; Polster, Rudolf; and Hartmann, Eduard, 3,849,150.
Hartwig, Jurgen; Scheffler, Ulrich; and Ulrich, Klaus-Herbert, to Fried. Krupp Gesellschaft mit beschankter Haftung. Processing ores containing nickel and copper oxides. 3,849,269, Cl. 204-107.000.
Harvey, Edgar Lloyd; and Levine, Joel Martin, to Burroughs Corporation. Multiple position display panel having spurious glow suppressor. 3,849,694, Cl. 313-519.000.
Harvey, Richard D.; and Ladenburg, Kurt, to Penick & Ford, Limited. Process of immobilizing enzymes. 3,849,253, Cl. 195-68.000.
Harvey, Robert J., to Mirlin Corporation. Method for modifying sour and bitter taste. 3,849,555, Cl. 424-195.000.
Hasegawa, Katsuji, to Meinan Machinery Works, Inc. Sanding drum structure in a drum sander. 3,848,374, Cl. 51-373.000.
Hasegawa, Yuji: *See*—
Matsui, Akio; Hasegawa, Yuji; and Fujimoto, Hiroshi, 3,849,356.
Hasiotis, Christ S., to Xerox Corporation. Supported developer blade cleaning. 3,848,993, Cl. 355-15.000.
Hasselblad, Fritz Victor: *See*—
Hyden, Viktor Holger; and Hasselblad, Fritz Victor, 3,848,580.
Hast, Per Sigvard. Grass cutter. 3,848,401, Cl. 56-296.000.
Hatch Associates Limited: *See*—
Hatch, Gerlad Gordon; and Wasmund, Bert Orland, 3,849,587.
Hatch, Gerlad Gordon; and Wasmund, Bert Orland, to Hatch Associates Limited. Cooling devices for protecting refractory linings of furnaces. 3,849,587, Cl. 13-32.000.
Hatch, Jeffrey A.: *See*—
Lockie, Arthur M.; and Hatch, Jeffrey A., 3,848,955.
Hatley, Earl L.: *See*—
Bird, Stanford W.; Wasserman, Jerome D.; and Hatley, Earl L., 3,848,795.
Haug, Theobald: *See*—
Renner, Alfred; and Haug, Theobald, 3,849,374.
Hawke, Earle G., to Mason Company, The. Pressure sensitive device for operating a switch or the like. 3,848,517, Cl. 92-101.000.
Hawkins, Royal R., to Honeywell Inc. Vehicle steering control system. 3,848,690, Cl. 180-6.480.
Hawley, Margaret Grant, to Smith Kline Corporation. Display device. 3,848,348, Cl. 40-64.00r.
Hawley, Wilbur W.: *See*—
Weber, Kenneth E.; Crozier, Donald G.; and Hawley, Wilbur W., 3,849,264.
Hawthorne, David Geoffrey: *See*—
Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, 3,849,149.
Hayashi, Takao: *See*—
Kirimoto, Kazusuke; Hayashi, Takao; and Kojima, Hiroaki, 3,849,521.
Hayashi, Yoshiaki: *See*—
Omiya, Shoji; Hayashi, Yoshiaki; and Kuki, Akio, 3,849,796.
Hayashida, Yoshihiro, to Tokico Ltd. Device for detecting decrease of liquid in a liquid reservoir. 3,849,770, Cl. 340-244.00e.
Hayden, Daniel B.: *See*—
Smith, George W.; and Hayden, Daniel B., 3,848,966.
Hazel, John O., to Robertson, H. H., Company. Reversible trim strip with attached gasket for an underfloor electrical cable trench. 3,848,379, Cl. 52-221.000.
Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., to Hazelett-Strip-Casting Corporation. Carriage orientation and lift system for a twin belt continuous metal casting machine. 3,848,658, Cl. 164-278.000.
Hazelett-Strip-Casting Corporation: *See*—
Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., 3,848,658.
Hazeltine Corporation: *See*—
Reeber, Nicholas J.; and Saint John, Karl M., 3,848,856.
Hazen, Thamon E.; and Miner, John R., to Iowa State University Research Foundation, Inc. Ribbed floor and method of waste removal. 3,848,568, Cl. 119-28.000.
Heath, John S.: *See*—
Cuzner, David E.; Dodman, Charles O. R.; and Heath, John S., 3,849,800.
Hechelhammer, Wilhelm: *See*—
Michael, Dietrich; Gilch, Heinrich; and Hechelhammer, Wilhelm, 3,849,154.
Hedenskog, Gudmund Oscar: *See*—
Mogren, Hakan Lars; Hedenskog, Gudmund Oscar; and Enebo, Lennart Eugen, 3,848,812.
Hedstrom Co.: *See*—
Boucher, Raymond W.; Boudreau, Robert; and Conti, John A., 3,849,008.
Heeks, Robert E.: *See*—
Walters, David W.; Heeks, Robert E.; and Sullivan, Donald P., 3,849,146.
Heerdt, Ruth: *See*—
Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Thiel, Max; and Weyer, Rudi, 3,849,417.
Hefren, Fred W. Stabilizer apparatus for road vehicles. 3,848,885, Cl. 280-94.000.
Heiba, El-Ahmadi I.: *See*—
Bridger, Robert F.; Heiba, El-Ahmadi I.; and Stournas, Stamoulis, 3,849,320.
Heiland, Wolfgang K., to United States of America, Agriculture. Doctoring apparatus. 3,848,734, Cl. 198-230.000.
Heimbach, Paul: *See*—
Wilke, Gunther; and Heimbach, Paul, 3,849,506.
Heine, Hans-Georg; Rosenkranz, Hans-Jurgen; and Rudolph, Hans, to Bayer Aktiengesellschaft. Thiomethylated benzophenones. 3,849,497, Cl. 260-591.000.
Heinrich, Peter, Jr.: *See*—
Niccum, Forest G.; and Heinrich, Peter, Jr., 3,849,314.
Heisler, Raymond A. Apparatus and method for orienting and case packing eared containers. 3,848,394, Cl. 53-26.000.
Hejzlar, Sid; and Zweig, Robert M., to Chatillon, John, & Sons, Inc. Slip-release linear force gauge for detecting compression and tension forces which exceed a standard force. 3,848,463, Cl. 73-141.0ab.
Heller, Paul R., to Westinghouse Electric Corporation. Liquid cooled rotor for dynamoelectric machines. 3,849,680, Cl. 310-54.000.
Helms, Horst, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method and apparatus for determining the position of a vehicle. 3,849,636, Cl. 235-150.270.
Hendrickson, Kenneth E.: *See*—
Goretzki, Jerome A.; Hendrickson, Kenneth E.; Mattson, Gary L.; and Mattson, Larry F., 3,849,714.
Hendrickson, Paul E., 33 1/3% to Ciardi, Albert A., Jr. Procedure for fabricating ultra-small gold wire. 3,848,319, Cl. 29-423.000.
Hennequin, Andre, to Societe des Aciers Fins de l'Est. Atomizers. 3,848,809, Cl. 239-412.000.
Henrick, Clive A.; and Staal, Gerardus B., to Zoecon Corporation. Long chain aliphatic thiolesters of cyclopropionic acid. 3,849,466, Cl. 260-455.00r.
Henrie, Thomas A.: *See*—
Scheiner, Bernard J.; Lindstrom, Roald E.; and Henrie, Thomas A., 3,849,265.
Henry, Richard D. Submersible aircraft carrier. 3,848,558, Cl. 114-16.00r.

Hensley, Albert L., Jr., to Standard Oil Company. Catalyst comprising zinc oxide, silica and alumina and processes employing same. 3,849,296, Cl. 208-216.000.

Herbenar, Edward J., to TRW Inc. Dual seat socket joint. 3,849,010, Cl. 403-138.000.

Herbst, Richard: *See—*
Bielfeldt, Friedrich Bernd; and Herbst, Richard, 3,849,048.

Hercules Incorporated: *See—*
Bloejack, James William, Jr.; Daniel, Truman Knox, Jr.; and Rolison, Darrell Edward, 3,848,548.
Breslow, David S., 3,849,230.
Vandenberg, Edwin James, 3,849,364.

Herman, Martin A. Universal gage with tilt-out uprights. 3,848,338, Cl. 33-174.0pb.

Herman, Stanley W., to General Motors Corporation. Friction welder. 3,848,793, Cl. 228-2.000.

Hesse, Kurt. Adaptor for an electrical power distributor track. 3,848,715, Cl. 191-45.00r.

Hessel, Birgit: *See—*
Percs, Edmund E.; Stocker, Kurt F.; Blomback, Birger; Blomback, Margareta; and Hessel, Birgit, 3,849,252.

Hessert, James E.: *See—*
Clampitt, Richard L.; and Hessert, James E., 3,848,673.

Hesson, Christer Ragnar: *See—*
Borg, Sven Christer; Hesson, Christer Ragnar; and Nilsson, Erik Henning, 3,848,753.

Hetherington, Matthew James; and Atkinston, Peter, to British Steel Corporation. Rotary ultrasonic testing apparatus. 3,848,461, Cl. 73-71.5us.

Hetz, Wolfgang, to Handels, Roth, GmbH. Sorption agent for non solid metals. 3,849,533, Cl. 423-99.000.

Hewitt, Gordon Trent, to Colgate-Palmolive Company. Detergent compositions. 3,849,348, Cl. 252-547.000.

Heylen, Renaat Frans: *See—*
Jeurissen, Lambert Gaston; Bollen, Romain Henri; Ghys, Theofiel Hubert; and Heylen, Renaat Frans, 3,849,658.

Hibino, Noburo; Seto, Kunihira; Kobayashi, Teruo; and Inoue, Kazuo, to Fuji Photo Film Co., Ltd. Polyethylene terephthalate film for use as roentgenographic film base. 3,849,139, Cl. 96-84.00r.

Hickling, Colin D., to American Thermostat Corporation. Nitinol activated switch usable as a slow acting relay. 3,849,756, Cl. 337-382.000.

Higashida, Yutaka: *See—*
Arimura, Ichiro; Higashida, Yutaka; and Kurashina, Kozo, 3,849,794.

Higgins, George C.: *See—*
Hamblen, David P.; and Higgins, George C., 3,849,657.

Hikita, Kenji: *See—*
Konishi, Masami; and Hikita, Kenji, 3,849,093.

Hilgen, Hendrika; and Rekers, Casper J. N., to Akzo N.V. Process for recovering mercury from a gas containing mercury vapor. 3,849,267, Cl. 204-99.000.

Hill, Donald F.: *See—*
Milstein, Donald; and Hill, Donald F., 3,849,288.

Hill, Edward J. Travel totes. 3,848,787, Cl. 224-45.00t.

Hills, William A., to FMC Corporation. Bis((1-oxo-2,6,7-trioxa-1-phosphabicyclo[2.2.2] oct-4-yl)methyl) 2,5-dibromoterephthalate. 3,849,522, Cl. 260-927.00r.

Hilterhaus, Karl. Gaff-scale with lock. 3,848,689, Cl. 177-233.000.

Hiltmann, Rudolf; Wollweber, Hartmund; Hoffmeister, Friedrich; and Kronebert, Hans-Gunther, to Bayer Aktiengesellschaft. N-Alkanoyl-N-(1-(heterocyclic amino) isopropyl)-2-aminopyridines in the treatment of pain. 3,849,563, Cl. 424-263.000.

Hily, Claude, to U.S Philips Corporation. Objective system the entrance pupil of which lies outside the system. 3,848,971, Cl. 350-216.000.

Hinds, James L.: *See—*
Shames, Oscar; Hinds, James L.; Palatucci, Gerald J.; and Raditz, Michael, 3,849,777.

Hines, Edward, Lumber Co.: *See—*
Miles, Thomas R., 3,848,646.

Hintz, Harold L.; and Webb, Joseph T., to Westvaco Corporation. Water resistant corrugated paperboard. 3,849,224, Cl. 156-208.000.

Hirabayashi, Takashi: *See—*
Kuwamura, Hideaki; Kashiwa, Ichiro; Hirabayashi, Takashi; and Tamura, Tadayoshi, 3,849,346.

Hirasawa, Shigeiti: *See—*
Kasahara, Masao; Namekawa, Toshihiko; Fujiwra, Keniti; Hirasawa, Shigeiti; and Sugiyama, Yasuo, 3,849,761.

Hirashima, Takashi: *See—*
Shoji, Akira; Yanagawa, Hitoshi; and Hirashima, Takashi, 3,848,982.

Hirata, Yoshimi: *See—*
Ando, Tetsuo; and Hirata, Yoshimi, 3,848,328.

Hirooka, Masaaki: *See—*
Oshima, Teruo; Nagase, Tsuneyuki; Masuko, Fujio; Wada, Takeshi; Hirooka, Masaaki; and Taniguchi, Isoji, 3,849,385.

Hirose, Kimiharu: *See—*
Kazaoka, Kenichi; Hirose, Kimiharu; Matsumoto, Hisao; and Takeshita, Yasuo, 3,848,888.

Hirsch, Karl, to Hirsh, Karl, OHG Plastikarenerzeugung, Firma. Keeping means for keeping storage boxes for compact cassettes. 3,848,738, Cl. 206-387.000.

Hirsh, Karl, OHG Plastikarenerzeugung, Firma: *See—*
Hirsch, Karl, 3,848,738.

Hirshfeld, Tsvi: *See—*
Teitelbaum, Dvora; Gan, Ramat; Meshorer, Asher; Hirshfeld, Tsvi; Arnon, Ruth; and Sela, Michael, 3,849,550.

Hitachi, Ltd.: *See—*
Endou, Hirohide; Kawasaki, Jun; Fujimoto, Yoshiji; Nakane, Keiichi; and Kitazume, Yoshiaki, 3,849,760.
Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.
Inoue, Masaru; Kaneko, Toshio; Matsumoto, Koichi; Ishikawa, Makoto; and Akitomo, Nobuo, 3,849,001.
Masai, Tadahisa; and Atago, Takeshi, 3,849,024.
Nakashima, Yoichi; Sakamoto, Hisashi; Ishizuka, Takeshi; and Suzuki, Kensuke, 3,849,791.
Oguro, Tomokatsu, 3,849,737.
Otubo, Osamu; Terashima, Isamu; and Akutsu, Norio, 3,848,990.
Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, 3,849,590.
Suzuki, Takaji; and Ogawa, Toshio, 3,848,586.

Ho, Edmond Yu-Shang, to Bell Telephone Laboratories, Incorporated. Carrier recovery in vestigial sideband data receivers. 3,849,730, Cl. 325-329.000.

Hockemeyer, Friedrich: *See—*
Nitzsche, Siegfried; Marwitz, Heinrich; and Hockemeyer, Friedrich, 3,849,359.

Hodkinson, Harold, to Automotive Products Limited. Fluid pressure braking system for vehicles. 3,848,935, Cl. 303-22.00r.

Hoehn, Hans; and Chasin, Mark, to Squibb, E. R., & Sons, Inc. Hydrazones of pyrazolopyridine carboxylic acids and esters. 3,849,411, Cl. 260-240.00g.

Hoehr, Lothar: *See—*
Frielingsdorf, Hans; Mueller-Tamm, Heinz; Hoehr, Lothar; and Kolk, Erich, 3,849,334.

Hoekstra, James, to Universal Oil Products Company. Method of catalyst manufacture. 3,849,343, Cl. 252-466.0pt.

Hofer, Gerald, to Bosch, Robert, G.m.b.H. Fuel injection pump for internal combustion engines. 3,848,576, Cl. 123-139.0bd.

Hofer, Wolfgang: *See—*
Colln, Reimer; Hofer, Wolfgang; Maurer, Fritz; and Rohe, Lothar, 3,849,524.

Hoffberger, Charles C., II; and Rivlin, Charles A. Television screen light shield. 3,849,598, Cl. 178-7.820.

Hoffenden-Richborough Limited: *See—*
Wilson-Haffenden, Philip, 3,848,650.

Hoffman, Henry Tice, Jr., to American Can Company. Chemically filled polymeric articles. 3,849,168, Cl. 117-106.00r.

Hoffman, Robert K., to Parker-Hannifin Corporation. Fluid line joint for a valve base plate. 3,848,900, Cl. 285-137.00r.

Hoffman, Robert K., to Parker-Hannifin Corporation. Fluid line joint for a valve base plate. 3,848,901, Cl. 285-137.00r.

Hoffmann, Peter; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of percarboxylic acid. 3,849,484, Cl. 260-502.00r.

Hoffmann-La Roche Inc.: *See—*
Coffen, David; and Fryer, Rodney, 3,849,399.
Coffen, David Llewellyn; and Fryer, Rodney Ian, 3,849,434.

Hoffmeister, Friedrich: *See—*
Hiltmann, Rudolf; Wollweber, Hartmund; Hoffmeister, Friedrich; and Kronebert, Hans-Gunther, 3,849,563.

Hoge, Daniel W. Crane tip alarm. 3,848,750, Cl. 212-69.000.

Hogue, Lois M. Adapter key caps. 3,848,723, Cl. 197-102.000.

Holiga, Ludomil A.: *See—*
Gargrave, Robert J.; and Holiga, Ludomil A., 3,848,494.

Holk, Albert J., Jr., to Continental Can Company, Inc. Method for forming protective edge on easy opening container. 3,848,557, Cl. 113-121.00c.

Holland, John G., Sr. Side boom pipe laying machine. 3,848,751, Cl. 212-145.000.

Holland, Monte G., to Research Corporation. Method of reducing intraocular pressure in human eyes. 3,849,577, Cl. 424-330.000.

Holland, Will W. Oil bath air filter element. 3,849,094, Cl. 55-330.000.

Hollinshead, Clive, 1/2 interest to Weiner, Ted and Weiner, Gwendolyn Patricia. Friction-reducing petroleum mixtures and method of making same. 3,849,323, Cl. 252-56.00r.

Hollis, Norman E.; Jutte, Gottfried W.; McCartney, Frank I.; and McHugh, John V., to Richardson Company, The. Method for producing battery terminal. 3,849,203, Cl. 136-135.00s.

Holloway, Robert Geofrey: *See—*
Cochrane, Kenneth Alfred; and Holloway, Robert Geofrey, 3,849,016.

Hollymatic Corporation, mesne: *See—*
Banike, Ronald A., 3,848,624.

Holovka, Charles Stephen: *See—*
Bolan, Peter Samuel; Bryant, Aramis Duane; Drejza, John Edward; Holovka, Charles Stephen; and Weber, Ludwig Wilhelm, 3,848,722.

Holzapfel, Jurgen, to Robot Foto und Electronic GmbH & Co. KG. Apparatus for monitoring traffic. 3,849,784, Cl. 346-107.0vp.

Holzrichter, Robert A., to Warwick Electronics Inc. Brightness limiting circuit. 3,848,945, Cl. 315-30.000.

Holzrichter, Robert A., to Warwick Electronics Inc. Signal translating channel with pre-shoot and over-shoot. 3,849,792, Cl. 358-37.000.

Hommerin, Michel, to Compagnie General de Radiolgie. System for processing film. 3,849,660, Cl. 250-570.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Tsuchiya, Toshio; and Takeuchi, Osamu, 3,848,936.
Hondzinski, Leonard J., to Nuprin Corporation. Conveyor assembly. 3,848,538, Cl. 104-155.000.
Hondzinski, Leonard J., to Nuprin Corporation. Conveyor assembly. 3,848,539, Cl. 104-155.000.
Hondzinski, Leonard J., to Nuprin Corporation. Conveyor assembly. 3,848,540, Cl. 104-155.000.
Hondzinski, Leonard J., to Nuprin Corporation. Conveyor belt. 3,848,541, Cl. 104-155.000.
Honeywell Inc.: *See—*
Beiter, Glenn A., 3,849,661.
Flynn, John, 3,849,678.
Hawkins, Royal R., 3,848,690.
Larsen, Larry D.; and Kompelien, Arlon D., 3,849,685.
Honeywell Information Systems, Inc.: *See—*
Durvasula, Srirama S., 3,849,768.
Hongo, Eitaro; Yamada, Hirohiko; Fujii, Yozo; Masuda, Katsumi; Itou, Junichi; and Nakano, Takaaki, to Sumitomo Chemical Company, Limited. Process for producing alpha-anthraquinone-sulfonates with low mercury content. 3,849,452, Cl. 260-370.000.
Hooker Chemical Corporation: *See—*
Golborn, Peter; and Duffy, James J., 3,849,440.
Pattison, Victor A., 3,849,425.
Pattison, Victor A., 3,849,426.
Pattison, Victor A., 3,849,427.
Pattison, Victor A., 3,849,428.
Weil, Edward D.; and Schlichting, Hans L., 3,849,477.
Hoover, Troy Eugene: *See—*
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Hopkins, Alton W., to Control Switch, Inc. Yarn detector switch-lower. 3,848,434, Cl. 66-163.000.
Hopper, Randall R.: *See—*
Adams, James M.; Hopper, Randall R.; Raley, Garland E.; and Rutherford, James K., 3,849,050.
Horio, Teisuke: *See—*
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Hornsveld, Eduard Maurice: *See—*
Van der Linde, Aart; and Hornsveld, Eduard Maurice, 3,849,215.
Hosaka, Akio; Baba, Kosaku; and Wazawa, Kiyoshi, to Nissan Motor Company, Limited. Fault detector for motor vehicle safety device. 3,849,759, Cl. 340-52.00r.
Hosking, John Trevor; and Blackham, Norman. Head-up display apparatus. 3,848,974, Cl. 351-174.000.
Hostetler, William: *See—*
Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,849,231.
Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. 2-Substituted-3-disubstituted-4,5,6,7-substituted or unsubstituted phthalimidines. 3,849,438, Cl. 260-325.000.
Hovel, Harold J.: *See—*
Braslau, Norman; Cuomo, John J.; Harris, Erik P.; and Hovel, Harold J., 3,849,707.
Howell, Wallace E. Air momentum anemometer. 3,848,465, Cl. 73-194.00r.
Howell, William G., to Exxon Research and Engineering Company. Blast chamber. 3,848,794, Cl. 228-3.000.
Howmet Corporation: *See—*
Boyle, James H.; and Ingalls, John E., 3,848,654.
Hoyt, Kenneth L.: *See—*
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Huang, Denis K.: *See—*
Griffiths, Darrell J. L.; and Huang, Denis K., 3,849,378.
Hubbard, James R., to Graphic Controls Corporation. Ink storage composition. 3,849,143, Cl. 106-22.000.
Huber, J. M., Corporation: *See—*
Abercrombie, William F., Jr., 3,849,151.
Huber, Josef: *See—*
Stutz, Hans; and Huber, Josef, 3,848,820.
Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Thiel, Max; and Weyer, Rudi, to Boehringer Mannheim GmbH. Certain 2-benzenesulfonylaminopyrimidines. 3,849,417, Cl. 260-256.50r.
Hudgins, Wayne A., to United States of America, Army. Shaft seal. 3,848,879, Cl. 277-80.000.
Hudson, Arthur Franklin. Mounting for tool bits. 3,848,302, Cl. 29-96.000.
Hughes, Elmer J. Sawhorse bracket. 3,848,701, Cl. 182-185.000.
Hughes, George W. Inner tube sealing means. 3,848,652, Cl. 152-427.000.
Hughes, Richard Swart; and Thompson, Julian L., to United States of America, Navy. Synchronously tuned laser transmitter and receiver. 3,849,742, Cl. 332-7.510.
Hulten, Richard E., to McCord Corporation. Bumper assembly. 3,848,916, Cl. 293-88.000.
Hunt, Alexander C.: *See—*
Kropp, Willis A., 3,848,763.
Hunter Douglas International N.V.: *See—*
Van Schijndel, Marinus Johannes, 3,848,824.
Hunter, James Stuart: *See—*
Corby, Neville Slater; Hunter, James Stuart; and Leng, John Lindley, 3,849,393.
Hurth, Carl, Maschinen-und Zahnradfabrik: *See—*
Erhardt, Manfred, 3,848,512.
Hurtig, Carl R.; Kent, Robert L.; and Blumle, Leo J., to Damon Corporation. Precise fluid-dividing apparatus. 3,848,633, Cl. 137-561.00a.
Hush Company, Inc.: *See—*
Johnson, Howard R., 3,849,086.
Huslander, William L.; and Glover, Charles J., to Dresser Industries, Inc. Pipe repair clamp. 3,848,638, Cl. 138-99.000.
Huston, Leroy S.; and Kulik, Joseph S., Jr., to GTE Sylvania Incorporated. Tungsten-halogen lamp with tantolum getter. 3,849,687, Cl. 313-179.000.
Hyden, Viktor Holger; and Hasselblad, Fritz Victor. Apparatus for controlled selective separation of undesirable constituents from blood to achieve a therapeutic effect. 3,848,580, Cl. 128-2.00f.
Hyer, Harry J.; and Rudy, Thomas P., to United Aircraft Corporation. Preparation of liquid polynuclear ferrocene derivatives. 3,849,461, Cl. 260-439.0cy.
I-T-E Circuit Breaker (Canada) Limited: *See—*
Orriss, William T., 3,849,748.
I-T-E Imperial Corporation: *See—*
Wilson, George A., 3,848,637.
Ibaugh, James Louis, to RCA Corporation. Electron discharge device having ellipsoid-shaped electrode surfaces. 3,849,644, Cl. 250-207.000.
Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, to Sumitomo Electric Industries Ltd. Laminate tape including an adhesive resin ternary copolymer of ethylene, vinyl acetate and glycidyl methacrylate of glycidyl acrylate and laminate sheath cablemade therefrom. 3,849,591, Cl. 174-107.000.
ICI Australia Limited: *See—*
Battaerd, Hendrik Adriaan Jacobus, 3,849,525.
Wisinski, Adam Prus, 3,848,507.
Igarashi, Isemi; Nakamura, Hiroshi; and Sugiyama, Susumu, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for producing a semiconductor strain sensitive element of an electromechanical semiconductor transducer. 3,848,329, Cl. 29-580.000.
Ihara, Takashi, to Canon Kabushiki Kaisha. Process for producing a drum photosensitive member for electrophotography. 3,849,128, Cl. 96-1.500.
Ikeda, Minoru, to France Bed Co., Ltd. Mattress. 3,848,283, Cl. 5-351.000.
Ikeda, Noboru: *See—*
Iwasa, Junzo; Maruto, Shunsuke; Ikeda, Noboru; Nakamura, Keiji; and Shoji, Yukinobu, 3,849,561.
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Ikeda, Tsukasa: *See—*
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Jensen, Finn; and Nadherny, Rudolph E., 3,848,912.
Illinois Tool Works, Inc.: *See—*
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Jysky, Goran; Mardla, Ilmar; and Ericsson, Bjorn, 3,848,686.
Imada, Isuke: *See—*
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Image Analysing Computers Limited: *See—*
Ablett, Roger John Herbert, 3,849,793.
Imamura, Kennosuke; Nabekawa, Shukichi; and Takada, Masao, to Nippon Chemical Industrial Co., Ltd. Process for the production of organic phosphoric acid esters. 3,849,439, Cl. 260-326.00e.
Imamura, Tetsuya: *See—*
Tokiwa, Fumikatsu; and Imamura, Tetsuya, 3,849,347.
Immel, Otto; and Schwarz, Hans-Helmut, to Bayer Aktiengesellschaft. Abrasive-resistant catalyst containing boric acid suitable for the rearrangement of ketoximes. 3,849,335, Cl. 252-432.000.
Imperial Chemical Industries, Limited: *See—*
Campbell, John Stewart; and Davies, Phineas, 3,849,538.
Corby, Neville Slater; Hunter, James Stuart; and Leng, John Lindley, 3,849,393.
Davies, Gareth Morse, 3,849,449.
Jackson, Peter Frederick; and Reid, James Angus Wilson, 3,849,380.
Nield, Erich, 3,849,384.
Ousby, John Clark; and Turner, William Brian, 3,849,437.
Waddan, Dhafir Yusuf, 3,849,472.
Inamoto, Inamoto; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kimura, Yoshitomo, to Kao Soap Co., Ltd. Diesters of 1,3-bis(carboxymethyl)adamantanes and process for preparing same. 3,849,473, Cl. 260-468.00g.
Incentive Research Development AB: *See—*
Dinh-Nguyen, Nguyen; and Stenhagen, Einar August, 3,849,458.
Indak Manufacturing Corporation: *See—*
Cobb, Jesse M.; and Schaad, William J., 3,849,612.
Indian Iron & Steel Company Limited, The: *See—*
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Ingalls, John E.: *See—*
Boyle, James H.; and Ingalls, John E., 3,848,654.
Ingham, Kenneth W. Musical toy. 3,848,504, Cl. 84-402.000.

Inion, Henri: *See*—
Descamps, Marcel; and Inion, Henri, 3,849,564.
Inmont Corporation: *See*—
Strecker, Larry A.; and Wood, James E., 3,849,354.
Inoue, Kazuo: *See*—
Hibino, Noburo; Seto, Kunihira; Kobayashi, Teruo; and Inoue, Kazuo, 3,849,139.
Inoue, Masakazu; Okamoto, Takehiko; and Nagai, Ikuo, to Toray Industries, Inc. Method of preparing highly concentrated resinous latex. 3,849,358, Cl. 260-29.7up.
Inoue, Masaru; Kaneko, Toshio; Matsumoto, Koichi; Ishikawa, Makoto; and Akitomo, Nobuo, to Hitachi, Ltd. Polarization interference correlation spectrometer. 3,849,001, Cl. 356-98.000.
Interlake, Inc.: *See*—
Thompson, Harry W., 3,848,747.
International Business Machines Corporation: *See*—
Bolan, Peter Samuel; Bryant, Aramis Duane; Drejza, John Edward; Holovka, Charles Stephen; and Weber, Ludwig Wilhelm, 3,848,722.
Braslau, Norman; Cuomo, John J.; Harris, Erik P.; and Hovel, Harold J., 3,849,707.
Cuzner, David E.; Dodman, Charles O. R.; and Heath, John S., 3,849,800.
Foster, Betty J.; and Tummala, Rao R., 3,849,190.
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Grebe, Kurt R., 3,849,136.
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International Chemical & Nuclear Corporation: *See*—
Robins, Roland K.; and Khwaja, Tasneem A., 3,849,397.
International Packings Corporation: *See*—
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Paris, Philippe Y. J.; Bougon, Pierre P. A.; and Guimard, Lucien, 3,849,597.
International Telephone and Telegraph Corporation: *See*—
Dwyer, Gregory J.; and Ferris, Walla L., 3,848,864.
International Tool Sales, Inc.: *See*—
Swisher, James A., 3,848,931.
Intomart N.V.: *See*—
Van Baggem, Johannes Willhelmus, 3,849,729.
Investors in Ventures, Inc.: *See*—
Bucalo, Louis, 3,848,578.
Iowa State University Research Foundation, Inc.: *See*—
Hazen, Thamon E.; and Miner, John R., 3,848,568.
Ipsen, William J., Jr. Portable camping equipment. 3,848,279, Cl. 5-113.000.
Irani, Meherwan C., to One-half to Buell, Eugene F. Method for recovery of elements and compounds from aqueous solutions. 3,849,535, Cl. 423-140.000.
Irissou, Pierre Regis Marie Henri; and Sarda, Pierre Jean Francois Jacques. Adjustable stepping drive for motion-picture film. 3,849,715, Cl. 318-696.000.
Isaacson, Raymond E.; and Brownell, Lloyd E., to United States of America, Atomic Energy Commission. Continuous process for immobilizing radionuclides, including cesium and ruthenium fission products. 3,849,330, Cl. 252-301.10w.
Ishiguro, Tatsuo, to Nippon Electric Company. Facsimile signal transmission system. 3,849,595, Cl. 178-6.000.
Ishihara Sangyo Kaisha Ltd.: *See*—
Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.
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Ishikawa, Toshio: *See*—
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Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, to Nippon Steel Corporation. Manufacturing method of high tension, high toughness steel. 3,849,209, Cl. 148-12.00f
Ishizuka, Takeshi: *See*—
Nakashima, Yoichi; Sakamoto, Hisashi; Ishizuka, Takeshi; and Suzuki, Kensuke, 3,849,791.
Isogai, Tokio: *See*—
Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, 3,849,590.
Istituto Elettrotecnico Nazionale Galileo Ferraris: *See*—
Soardo, Paolo; and Pasta, Mario, 3,849,000.
Iten, Clemens A., to Morris, Philip, Incorporated. Blade dispenser with used blade vault. 3,848,770, Cl. 221-102.000.
Ito, Naganori; and Aikawa, Hiroshi, to Nissan Motor Company, Limited. Vehicle hydropneumatic suspension system. 3,848,862, Cl. 267-64.00r.
Itou, Junichi: *See*—
Hongo, Eitaro; Yamada, Hirohiko; Fujii, Yozo; Masuda, Katsumi; Itou, Junichi; and Nakano, Takaaki, 3,849,452.
ITT Industries, Inc.: *See*—
Perche, Maurice, 3,848,800.
Tippmann, Heinrich, 3,848,475.
van der Perk, Klaas Anthonie Jacob, 3,848,456.
Iwano, Haruhiko; Tanaka, Mitsugu; Otsuki, Tesuo; and Arai, Atsuaki, to Fuji Photo Film Co., Ltd. Process for forming photographic images by high speed diffusion transfer process. 3,849,133, Cl. 96-29.00r.
Iwasa, Junzo; Maruto, Shunsuke; Ikeda, Noboru; Nakamura, Keiji; and Shoji, Yukinobu. Anti-peptic ulcer substance from corydalis tubers. 3,849,561, Cl. 424-258.000.
Iwasaki, Kazunari: *See*—
Suzuki, Kensuke; Goto, Yasuhide; Iwasaki, Kazunari; and Sumitomo, Yoshiharu, 3,849,188.
Iwasaki, Yasuhiro; Tsukamoto, Hidehiko; Maeda, Nobutaka; and Takeuchi, Chikara, to Mitsubishi Jukogyo Kabushiki Kaisha. Arrangement for bending steel plates. 3,848,446, Cl. 72-168.000.
Ixer, Bernard W.: *See*—
Carpenter, James H., Jr.; and Ixer, Bernard W., 3,848,815.
Izumi, Hiroshi: *See*—
Katahira, Toshiaki; Izumi, Hiroshi; and Tokonami, Masao, 3,849,773.
Jack, David; and Glover, Ernest Edward, to Allen & Hansbury Limited. Pharmaceutical compositions containing 1,1-azo bis-(1H-imidazo (1,2a) pyridinium dibromide compounds and the use thereof. 3,849,557, Cl. 424-226.000.
Jackimiak, Paul D., to International Business Machines Corporation. Roll for contact fusing thermoplastic particles to substrates. 3,848,305, Cl. 29-132.000.
Jackson, Geoffrey N.; Pickard, Robert G.; Brackley, Graham; and Satchell, David W., to E.R.A. Patents Limited. Sputtering apparatus. 3,849,283, Cl. 204-298.000.
Jackson, Peter Frederick; and Reid, James Angus Wilson, to Imperial Chemical Industries Limited. Polyesters. 3,849,380, Cl. 260-75.00r.
Jacobs, Gerard O.: *See*—
Mortimer, Frans H.; Jacobs, Gerard O.; Decoene, Frans J. G. C.; Braet, August; and Rowland-Hill, Edward W., 3,848,609.
Jacobs, Louis John, to Combustion Engineering, Inc. Densification of hard chrome plated surfaces. 3,849,206, Cl. 148-6.200.
Jacobs, Louis John, to Combuation Engineering, Inc. Electric arc furnaces and refractory shapes therefor. 3,849,586, Cl. 13-32.000.
Jacobson, Charles F.: *See*—
Crowther, Ted J.; Jacobson, Charles F.; and Sutherlin, Kent K., 3,849,766.
Jacoby, Frederick J.: *See*—
Earhart, Howard F.; Jacoby, Frederick J.; and Starck, Clemens B., 3,849,191.
Jaggers, Brian George; Ufton, Keith Frederick; and Wagner, Horst Richard, to Bush Boake Allen Limited. Solid washing compositions. 3,849,326, Cl. 252-89.000.
Jakubek, Peter, to Fa. International Pollution Control Systems, Inc. Device for removing oil and the like from water contaminated by oil or the like. 3,849,311, Cl. 210-188.000.
Jambor, Dorothy E., to DOTCO Incorporated. Electrical circuit board terminal springclip. 3,848,947, Cl. 339-17.00r.
Janko, Bozidar: *See*—
Piazza, Richard Elliot; and Janko, Bozidar, 3,849,695.
Jannot, Michel Rene; Vaillant, Robert Guillaume; and Dzalba-Lyndis, Serge Yvan, to Societe Nationale Industrielle Aerospatiale. Acoustic damping and cooling of turbojet exhaust ducts. 3,848,697, Cl. 181-33.0hb.
Janssen, Joannes Franciscus: *See*—
Merz, Josef; Van Esdonk, Johannes; and Janssen, Joannes Franciscus, 3,848,973.
Japan Exlan Company Limited: *See*—
Takeya, Kenji; and Tanahashi, Kunio, 3,849,242.
Jarrett, Noel: *See*—
Bruno, Marshall J.; Jarrett, Noel; and Slaugenhaupt, Burl L., 3,849,119.
Jaschinski, Klemens: *See*—
Zirngibl, Hans; Fuhr, Werner; Jaschinski, Klemens; Beumer, Peter; and Weidmann, Walter, 3,849,543.
Jautelat, Manfred, to Bayer Aktiengesellschaft. Preparation of α-oximinonitriles. 3,849,469, Cl. 260-464.000.
Jensen, Finn; and Nadherny, Rudolph E., to Illinois Railway Equipment Company. Latch for hatch covers for hopper cars. 3,848,912, Cl. 292-256.500.
Jepsen, Milford L. Impingement shield. 3,848,842, Cl. 248-204.000.
Jeter, Watt Nixon: *See*—
Ficklinger, Thomas Franklin; Jeter, Watt Nixon; and Likhyani, Kewal Krishan, 3,849,074.
Jettmar, Werner: *See*—
Schrempp, Klaus; Jettmar, Werner; Polster, Rudolf; and Hartmann, Eduard, 3,849,150.
Jeurissen, Lambert Gaston; and De Smedt, Frans Antoon, to AGFA-Gevaert N.V. Process for the semi-continuous preparation of high-molecular weight linear polyesters. 3,849,379, Cl. 260-75.00m.
Jeurissen, Lambert Gaston; Bollen, Romain Henri; Ghys, Theofiel Hubert; and Heylen, Renaat Frans, to Agfa-Gevaert N.V. Radiographic recording element and its use in radiography. 3,849,658, Cl. 250-486.000.

Johansson, Bengt, to Centro-Maskin i Goteborg AB. Safety hood for grinding discs. 3,849,088, Cl. 51-269.000.

Johns-Manville Corporation: *See*—
Mikulak, John Paul, 3,849,240.

Johnson & Johnson: *See*—
Drelich, Arthur H.; and Lukacs, George J., 3,849,173.
Mesek, Frederick K., 3,848,598.

Johnson, Alexander Lawrence, to Du Pont de Nemours, E. I., and Company. Cyclization of 2-(3-aryl-5-pyrazolyl)benzoic acids, esters and amides to 2-arylpyrazolo [5-1-a]isoindol-8-ones. 3,849,436, Cl. 260-310.00r.

Johnson, Boyd R. Non-corrosive aquarium lamp assembly. 3,849,700, Cl. 315-72.000.

Johnson, Dale R., to Norfin, Inc. No-counter sorter-stacker. 3,848,867, Cl. 271-173.000.

Johnson, Graham Frederick. Method of and apparatus for rediussing an edge or edges of a metallic aerofoil blade. 3,849,273, Cl. 204-129.600.

Johnson, Howard R., to Hush Company, Inc. Supercharger for internal combustion engine carburetion. 3,849,086, Cl. 48-180.00c.

Johnson, Richard A.; and Fruhwald, John M., to Westinghouse Electric Corporation. Logarithmic computing circuit. 3,849,706, Cl. 317-27.00r.

Johnson Service Company: *See*—
Strawn, Charles F., 3,848,411.

Johnson Service Company, mesne: *See*—
Nettles, Robert G., 3,849,674.

Johnston, Richard L.: *See*—
Johnston, Richard L., 3,848,543.

Johnston, Richard L., to Johnston, Richard L. and Ruben, Sam L. Adjustable shelf structure. 3,848,543, Cl. 108-5.000.

Jones, Charles, to Curtiss-Wright Corporation. Intermediate housing section for a multi-rotor rotary internal combustion engine and method of manufacture thereof. 3,849,035, Cl. 418-60.000.

Jones, Raymond R.: *See*—
Schellenberg, James M.; and Jones, Raymond R., 3,849,745.

Jones, Robert E.: *See*—
Messner, John S.; and Jones, Robert E., 3,848,692.

Jonsson, Arne Gosta; and Torstensson, Nils Torsten Lennart, to Astra Lakemedel Aktiebolag. Protease inhibitors and method for preparation. 3,849,552, Cl. 424-115.000.

Jordache, Rene. Potters wheel heads. 3,849,054, Cl. 425-459.000.

Jordan, Ingo, to Lever Brothers Company. Sorting and stacking of food slices. 3,848,757, Cl. 214-152.000.

Jordan, Lavell, Jr.: *See*—
Groom Lemuel D., III; and Jordan, Lavell, Jr., 3,849,741.

Jorgensen, Jens L., to Minnesota Mining and Manufacturing Company. Pavement marking material containing a polyamide modified by a diphenolic acid. 3,849,351, Cl. 260-18.00n.

Joschko, Gunter; and Winter, Hans-Jurgen, to Ted Bildplatten Aktiengesellschaft AEG-Telefunken TELDEC. Scanning element. 3,848,876, Cl. 274-38.000.

Joslin, Frederick R., to United Aircraft Corporation. Electrochemical drilling. 3,849,271, Cl. 204-129.200.

Joubert, Jean-Claude: *See*—
Ferrand, Bernard; Forrat, Francis; Grange, Yves; Joubert, Jean-Claude; and Mareschal, Jean, 3,849,193.

Jouffret, Michel: *See*—
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Jun, Mong-Jon: *See*—
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Jureit, John Calvin; Cotten, Howell J.; Castillo, Adolfo; and Leutwyler, Roy. Apparatus for fabricating wooden frames. 3,848,791, Cl. 227-100.000.

Justice, Frank K., to Sperry Rand Corporation. Universal programmable digital testing interface line. 3,849,726, Cl. 324-73.00r.

Justice, James W. H., to Westinghouse Electric Corporation. Multi-picture TV system with audio and coding channels. 3,849,594, Cl. 278-5.600.

Jutte, Gottfried W.: *See*—
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Jysky, Goran; Mardla, Ilmar; and Ericsson, Bjorn, to Ilmeg AB. Device for collecting drill dust and a sealing member intended for said device. 3,848,686, Cl. 175-209.000.

Kaartinen, Niilo H., to Packard Instrument Company Inc. Combustion apparatus and method for materials containing a radioactive isotope tracer. 3,849,069, Cl. 23-230.0pc.

Kabelschlepp Gesellschaft mit beschrankter Haftung: *See*—
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Kabushiki Kaisha Kohjin: *See*—
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Kado, Masaru: *See*—
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Kadota, Shozo: *See*—
Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.

Kadota, Tokuzo, to Matsuhita Electric Industrial Co., Ltd. Deflection coils producing pincushion and barrel deflection fields. 3,849,749, Cl. 335-210.000.

Kadowaki, Takashi; Dohi, Michio; and Yokobori, Katsuichi, to Denki Kagaku Kogyo Kabushiki Kaisha. Chloroprene elastomer composition. 3,849,519, Cl. 260-890.000.

Kahmann, Anthony J. Method of and apparatus for custom molding footwear. 3,848,286, Cl. 12-142.000.

Kaiser Industries Corporation: *See*—
Keagy, Edward, 3,848,659.

Kaiser, Leo: *See*—
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Kalle Aktiengesellschaft: *See*—
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Kalopissis, Gregoire, to Societe Anonyme dite: L'Oreal. Colored nail polishes. 3,849,547, Cl. 424-61.000.

Kalopissis, Gregoire, to Societe Anonyme dite: L'Oreal. Process and cosmetic compositions for the treatment of skin and scalp. 3,849,576, Cl. 424-330.000.

Kamada, Taichi: *See*—
Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, 3,849,298.

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Takagi, Mikio; Nakayama, Kazufumi; Terada, Chiaki; and Kamioka, Hajime, 3,849,270.

Kampe, Marcis M., to Enthone, Incorporated. Alkaline bright zinc electroplating. 3,849,325, Cl. 252-79.100.

Kamyr Aktiebolag: *See*—
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Kanai, Tamaki: *See*—
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Kanbe, Yoichiro. Emergency escaping device for high building. 3,848,698, Cl. 182-83.000.

Kanegafuchi Boseki Kabushiki Kaisha: *See*—
Ando, Satoshi; Matsui, Masao; and Ogata, Fumimaro, 3,849,044.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
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Kaneko, Susumu: *See*—
Arai, Mamoru; Haneishi, Tatsuo; Kayamori, Hisashi; Takiguchi, Yoo; Kitano, Noritoshi; and Kaneko, Susumu, 3,849,398.

Kaneko, Toshio: *See*—
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Kang, Jung W.: *See*—
Maitlis, Peter M.; White, Colin; Kang, Jung W.; and Gill, Devinder S., 3,849,459.

Kanno, Kyusei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Single lens reflex camera. 3,848,984, Cl. 354-38.000.

Kao Soap Co., Ltd.: *See*—
Inamoto, Inamoto; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kimura, Yoshitomo, 3,849,473.
Tokiwa, Fumikatsu; and Imamura, Tetsuya, 3,849,347.

Karle, Franklin J.: *See*—
Hargash, Paul; and Karle, Franklin J., 3,848,470.

Karlikowski, Jupp; and Michel, Hans, to Siemens Aktiengesellschaft. Etch-bleaching treatment of exposed and developed photo plates and films. 3,849,135, Cl. 96-36.000.

Karlson, Harald E., to Goldsworthy Engineering, Inc. Apparatus and method for producing no-twist center pull roving packages. 3,848,405, Cl. 57-71.000.

Kasahara, Masao; Namekawa, Toshihiko; Fujiwra, Keniti; Hirasawa, Shigeiti; and Sugiyama, Yasuo, to Mitsubishi Denki Kabushiki Kaisha. Communication system. 3,849,761, Cl. 340-146.10r.

Kashiwa, Ichiro: *See*—
Kuwamura, Hideaki; Kashiwa, Ichiro; Hirabayashi, Takashi; and Tamura, Tadayoshi, 3,849,346.

Katahira, Toshiaki; Izumi, Hiroshi; and Tokonami, Masao, to Matsushita Electric Industrial Co., Ltd. Apparatus for displaying characters and/or limited graphs. 3,849,773, Cl. 340-324.0ad.

Kato, Yoshiro; and Kado, Masaru, to Mitsui Toatsu Chemicals Inc. and Kumiai Chemical Industry Co., Ltd. Mixed herbicide composition. 3,849,109, Cl. 71-100.000.

Katoh, Yoshiki: *See—*
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Katz, Howard M.: *See—*
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Kaup, Friedel; and Warnke, Heinrich, to Miele & Cie. Method for coating steel parts with enamel. 3,849,175, Cl. 117-70.000.
Kautex-Werke Reinold Hagen GmbH: *See—*
Brieschke, Ewald; Kiefer, Esich; and Rolniczak, Heinz, 3,849,049.
Kaval, Paul W. Stove pipe elbow. 3,848,308, Cl. 29-157.00a.
Kawai, Yoshihiro, to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho. Turn signal switch apparatus for motor vehicle. 3,849,613, Cl. 200-61.270.
Kawanishi, Yasuhiro: *See—*
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Kawano, Tsuyoshi: *See—*
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Kawasaki Jukogyo Kabushiki Kaisha: *See—*
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Kawasaki, Jun: *See—*
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Kawasaki Jyukogyo Kabushiki Kaisha: *See—*
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Kayamori, Hisashi: *See—*
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Kayser, Kenneth L. Blood-gas separating system for perfusate circulation. 3,849,071, Cl. 23-258.500.
Kazakov, Nikolai Efimovich; Shipitsin, Svyatoslav Sergeevich; Minchenko, Veniamin Alexandrovich; Kudryavtsev, Innokenty Mikhailovich; Zimin, Vladimir Afanasievich; and Pervitsky, Boris Antonovich. Extruder with rotating die head. 3,849,046, Cl. 425-208.000
Kazaoka, Kenichi; Hirose, Kimiharu; Matsumoto, Hisao; and Takeshita, Yasuo, to Aisin Seiki Kabushiki Kaisha. Seatbelt retractor. 3,848,888, Cl. 280-150.0sb.
Keagy, Edward, to Kaiser Industries Corporation. Apparatus for handling molds. 3,848,659, Cl. 164-405.000.
Kearse, William E.: *See—*
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Keenan, Thomas A.: *See—*
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Kelso Marine, Inc.: *See—*
Linam, Richard Lee; and Sheehan, Hilary W., 3,849,626.
Kemmetmueller, Roland, to American Waagner-Biro Company, Inc. Bunker-boiler installations. 3,848,344, Cl. 34-168.000.
Kemper, Daryl M.: *See—*
Scott, Kelley E., Jr.; Kemper, Daryl M.; Grove, Lloyd E.; and Kiess, Ronald J., 3,849,681.
Kemper, Kate. Device for producing a continuous dough strip. 3,849,047, Cl. 425-238.000.
Kendall Company, The: *See—*
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Kennecott Copper Corporation: *See—*
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Kenon, Clarence. Golf set. 3,848,737, Cl. 206-315.000.
Kent, Francis Joseph; and Steinbrook, Seymour E., to Wean United, Inc. Control means for opposed rams of a press. 3,848,525, Cl. 100-48.000.
Kent, Raymond C., to Armstrong Cork Company. Method of making a non-woven needled fabric having a random linear streaked design. 3,849,223, Cl. 156-148.000.
Kent, Robert L.: *See—*
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Rochfort, William Phillip King, 3,849,017.
Kerfoot, Charles S.; and Halgas, Frank A., to Westinghouse Electric Corporation. Integrated dual voltage power supply. 3,849,701, Cl. 315-101.000.
Kern, Loyd Rupert, to Atlantic Richfield Company. Method of producing bitumen for a subterranean tar sand formation. 3,848,671, Cl. 166-248.000.
Kern, Walter, to Teradyne, Inc. High density terminal strip. 3,848,958, Cl. 339-148.00r.
Kerst, Al F.; Douros, John D., Jr.; and Brokl, Milan. 5-(5'Barbituri-lidene)-4-oxothiazolidine-2-imino HCl salt used as an antimicrobial agent. 3,849,560, Cl. 424-254.000.
Kerwin, Richard G.: *See—*
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Kessler, Gustav; Frank, Erich; and Laumann, Volker, to Wiegand Karlsruhe GmbH. Falling film evaporator. 3,849,232, Cl. 159-13.00a.
Keyes, John J., Jr.: *See—*
Dial, Ralph E.; Keyes, John J., Jr.; and Krewson, John W., Jr., 3,848,466.
Khammous, Robert; Langlet, Andre; and Leclercq, Michel, to Compagnie Honeywell Bull (Societe Anonyme). Tantalum resistors with gold contacts. 3,849,757, Cl. 338-320.000.
Khwaja, Tasneem A.: *See—*
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Kidd, Norman D.: *See—*
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Kiess, Ronald J.: *See—*
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Kihlstedt, Per Gudmar, to AB Cold Bound Pellets. Method for purifying and agglomerating pyrite cinders. 3,849,111, Cl. 75-2.000.
Kikuchi, Makoto; Asano, Kiroaki; Otsu, Ikoo; and Saeki, Toyoaki, to Toyoda Koki Kabushiki Kaisha. Grinding apparatus for side surface of a workpiece. 3,848,362, Cl. 51-2.00k.
Kikumoto, Ryoji, to Mitsubishi Chemical Industries, Limited. Process for manufacturing 6-nitro-2-substituted hexanoic acid esters. 3,849,476, Cl. 260-478.000.
Kilgore, Roy L., to Lockheed Aircraft Corporation. Method and apparatus for supplying a temperature conditioned airflow to an open compartment in an explosion sustaining ambient surrounding. 3,848,662, Cl. 165-1.000.
Killens, Charles: *See—*
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King, Roy R., to Industrial Industries, Inc. Ventilating system. 3,848,521, Cl. 98-115.00k.
Kinnan, Frank R. Adjustable elbow for split conduit. 3,848,903, Cl. 285-179.000.
Kinney, Robert E.: *See—*
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Kinoshita, Keijiro, to Nissan Motor Company, Limited. Hydraulic torque converter and power system incorporating same. 3,848,410, Cl. 60-347.000.
Kinoshita, Koichi; and Fukuda, Tadaji, to Katsuragawa Denki Kabushiki Kaisha. Electrophotographic element containing Se-Te alloy layers. 3,849,129, Cl. 96-1.500.
Kins Developments Limited: *See—*
Perry, Edward James; and Moumouloff, Paul, 3,848,664.
Kirimoto, Kazusuke; Hayashi, Takao; and Kojima, Hiroaki, to Asahi Glass Company, Ltd. Oil- and water-repellent composition comprising a polymer containing fluoroalkyl monomer units and an additive copolymer. 3,849,521, Cl. 260-900.000.
Kirkham, Kathleen E., to Franklin Mint Corporation. Method of producing a metal object with high relief and having a proof finish from powdered metal. 3,848,312, Cl. 29-160.600.
Kirwan, Donald J.; and Gainer, John L., to University of Virginia, The. Process for effecting enzymatic reactions in aerosols. 3,849,254, Cl. 195-116.000.
Kitano, Noritoshi: *See—*
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Kitazume, Yoshiaki: *See—*
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Kitrilakis, Sotiris, to Tecna Corporation. Intrauterine device. 3,848,590, Cl. 128-130.000.
Kittaka, Hirokazu: *See—*
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Klaenhammer, Bryan L., to Minnesota Mining and Manufacturing Company. Magnetic toner powder applicator. 3,849,161, Cl. 117-17.500.
Kleefeldt, Frank: *See—*
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Kleen Test Products, Inc.: *See—*
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Klein, Arthur J.: *See—*
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Kleinewefers Industrie Companie GmbH: *See—*
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Kleinfeld, Jack M.: *See—*
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Kline, Granville B.: *See—*
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Klockner-Werke AG: *See—*
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Klompas, Nicholas, to General Electric Company. Stator assembly. 3,849,023, Cl. 415-170.000.

Kloppenstein, King L., to Triangle Package Machinery Company. Liquid-repelling shield device. 3,848,688, Cl. 177-179.000.

Klutchko, Sylvester: *See—*
Von Strandtmann, Max; Klutchko, Sylvester; Kaminsky, Daniel; and Shavel, John, Jr., 3,849,446.

Knapp, Philip B., to Minnesota Mining & Manufacturing Co., mesne. Apparatus for manufacturing environmental seed cells. 3,849,041, Cl. 425-110.000.

Knerr, Richard Parke: *See—*
Fetty, Warren Newton; Knerr, Richard Parke; Gillespie, Richard Lee; and Bettencourt, Pierre Andre, 3,848,808.

Kniel, Ludwig, to Lummus Company, The. Fractionating LNG utilized as refrigerant under varying loads. 3,849,096, Cl. 62-23.000.

Knoll A.G. Chemische Fabriken: *See—*
Raschack, Manfred; and Bub, Oskar, 3,849,570.

Knorre, Helmut; and Leidl, Peter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for gas-free packaging of molten alkali metal. 3,848,391, Cl. 53-7.000.

Knorre, Vadim Georgievich: *See—*
Tesner, Pavel Alexandrovich; Knorre, Vadim Georgievich; Podkopaev, Vladimir Fedorovich; Pakhtusova, Tamara Timofeevna; Baenkevich, Vsevolod Viktorovich; and Astakhov, Arkady Petrovich, 3,849,073.

Knowles, William S.; and Sabacky, M. Jerome, to Monsanto Company. Catalytic asymmetric hydrogenation. 3,849,480, Cl. 260-490.000.

Kobayashi, Masaaki: *See—*
Sato, Yasumasa; Matsuyama, Shigeru; and Kobayashi, Masaaki, 3,848,655.

Kobayashi, Teruo: *See—*
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Kobe, Inc.: *See—*
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Kocher, Haribhajan S.: *See—*
Thettu, Raghulinga R.; and Kocher, Haribhajan S., 3,848,988.

Koda, Minoru; Shioyama, Tadao; and Nishiyama, Akio, to Matsushita Electric Industrial Co., Ltd. Video tape recorder in which the drum is rotated synchronously with signals on tape. 3,849,795, Cl. 360-73.000.

Koff, Fred W.: *See—*
Fuhrmann, Robert; Koff, Fred W.; and Pisanchyn, John, 3,849,481.

Koftfield, Richard E.: *See—*
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Kohl, Hans: *See—*
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Kohler, Erwin. Wig. 3,848,612, Cl. 132-53.000.

Kohno, Shoji: *See—*
Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685.

Koike, Hirotami; and Ueno, Katsuyoshi, to Nihon Denshi Kabushiki Kaisha. Scanning electron microscope. 3,849,647, Cl. 250-306.000.

Kojima, Hiroaki: *See—*
Kirimoto, Kazusuke; Hayashi, Takao; and Kojima, Hiroaki, 3,849,521.

Kokido, Hiroshi: *See—*
Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.

Kolk, Erich: *See—*
Frielingsdorf, Hans; Mueller-Tamm, Heinz; Hoehr, Lothar; and Kolk, Erich, 3,849,334.

Kolling, Byron M., to Bynal Products Inc. Rubbish compactor-container with load release. 3,848,797, Cl. 232-43.100.

Kolm, Hubert Ernest: *See—*
Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,849,231.

Koltz, Irving Morton: *See—*
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Komatsu, Noboru; Arai, Tohru; and Mizutani, Masayoshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Casting method for aluminum or aluminum alloys and a mold therefor. 3,848,847, Cl. 249-115.000.

Kommanditbolaget United Stirling (Sweden) AB & Co.: *See—*
Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar K:Son; and Lonnberg, Lars, 3,848,877.
Gothberg, Yngve Roland, 3,848,413.

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Konic, Wilhelm: *See—*
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Koninklijke Emballage Industrie Van Leer B.V.: *See—*
Naf, Willy B., 3,848,767.

Konishi, Masami; and Hikita, Kenji, to Nippondenso Co., Ltd. and Toyota Jidosha Kogyo Kabushiki Kaisha. Air cleaner for automobiles. 3,849,093, Cl. 55-316.000.

Koo, James Teh-Zen, to Bell Telephone Laboratories, Incorporated. Compensated IGFET flip-flop amplifiers. 3,849,673, Cl. 307-235.00r.

Kooi, Earl R.: *See—*
Armbruster, Frederick C.; and Kooi, Earl R., 3,849,194.

Koppers, Heinrich, Gesellschaft mit beschrankter Haftung: *See—*
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Kordesch, Karl V., to Union Carbide Corporation. Anode and sensing cell for hydrazine fuel cell. 3,849,201, Cl. 136-86.00b.

Kornis, Gabriel; Steinhards, Arnolds; Nidy, Eldon George; and Vostral, Henry J., to Upjohn Company, The. Herbicidal composition and method. 3,849,106, Cl. 71-92.000.

Korotkov, Mikhail Alexeevich: *See—*
Lykov, Mikhail Vasilievich; Rybalchenko, Gleb Fedorovich; Korotkov, Mikhail Alexeevich; Dobrovolsky, Evgeny Ivanovich; Rudenko, Inna Lukinichna; Avilov, Oleg Vladimirovich; and Bljumberg, Yakov Benedictovich, 3,849,233.

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Kosmatenko, Ivan Egorovich: *See—*
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Kossmann, Hans, to American Can Company. Apparatus method and valve for electrodepositing a coating on interior surfaces of container bodies. 3,849,284, Cl. 204-300.000.

Koucky, Robert Willis: *See—*
Blaskowski, Henry John; and Koucky, Robert Willis, 3,849,662.

Kozlowski, Robert H.; Sieg, Robert P.; and Scott, John W., to Chevron Research Company. Hydrocarbon conversion process. 3,849,082, Cl. 44-56.000.

Kraft, Russell H., to Fargo Mfg. Company, Inc. Self-sealing underground tap connector. 3,848,956, Cl. 339-98.000.

Kraklau, David M.; and Taylor, John H., to Advance Products Corporation. Surface indicator. 3,848,337, Cl. 33-174.00h.

Kramenic, Zdenek: *See—*
Zabrodsky, Zdenek; Augusta, Frantisek; and Kramenic, Zdenek, 3,848,641.

Krantz, H.: *See—*
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Kraus, Charles Edward, to Excelermatic, Inc. Traction roller transmission. 3,848,476, Cl. 74-206.000.

Krause, Hans-Dieter: *See—*
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Krauss-Maffei A.G.: *See—*
Bielfeldt, Friedrich Bernd; and Herbst, Richard, 3,849,048.

Krauss-Maffei Aktiengesellschaft: *See—*
Ghibu, Michael, Bohn, Gerhard; and Schwarzler, Peter, 3,849,724.

Krautkramer-Branson, Incorporated: *See—*
Bantz, Walter J.; Couture, John W.; and Pittaro, Richard J., 3,848,460.

Krenmayr, Willy, to Emhart Zurich S.A. Glass container inspection machine. 3,848,742, Cl. 208-111.700.

Krenzer, John, to Velsicol Chemical Corporation. Thiadiazole substituted triazines. 3,849,412, Cl. 260-248.0ns.

Kreuder, Hans-Joachim: *See—*
Dhein, Rolf; Rudolph, Hans; Kreuder, Hans-Joachim; and Gebauer, Herbert, 3,849,160.

Kreuz, Kenneth L.; and McMahon, Matthew A., to Texaco Inc. Motor fuel composition. 3,849,085, Cl. 44-78.000.

Krewson, John W., Jr.: *See—*
Dial, Ralph E.; Keyes, John J., Jr.; and Krewson, John W., Jr., 3,848,466.

Kroger, Harry; and Potter, Curtis N., to Sperry Rand Corporation. Method of manufacturing high frequency diode. 3,849,217, Cl. 156-11.000.

Krohm, Reinold, to Klockner-Werke AG. Scraper conveyor. 3,848,729, Cl. 198-171.000.

Kronebert, Hans-Gunther: *See—*
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Kropf, Manfred, to Triumph International Aktiengesellschaft. Cutting device for sewing machines. 3,848,554, Cl. 112-124.000.

Kropp, Willis A., to Hunt, Alexander C. Dual motion child resistant closure. 3,848,763, Cl. 215-225.000.

Krouse, Theodore L. Building structure fastener. 3,849,012, Cl. 403-188.000.

Kruger, Gunther, to Steele Chemicals Co., Ltd. 19-Oxygenated and 19-norΔ^{4}(14)-steroid compounds. 3,849,402, Cl. 260-239.55r.

Krumkalns, Eriks V.; and White, William A., to Lilly, Eli, and Company. 3Benzylpyridines. 3,849,423, Cl. 260-294.80g.

Kubo, Masanori: *See—*
Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, 3,849,298.

Kubu, Stanley, to Burger King Corporation. Extended storage life lettuce process and product. 3,849,581, Cl. 426-145.000.

Kuchinsky, Saul; Shesser, Arthur B.; Somlyody, Arpad; and Fehnel, Richard B., to Burroughs Corporation. Multiple position display panel having segmented electrodes. 3,849,693, Cl. 313-519.000.

Kuckertz, Wilhelm: *See—*
Uerlichs, Johannes; Muller, Rudolf; and Kuckertz, Wilhelm, 3,848,665.

Kudryavtsev, Innokenty Mikhailovich: *See—*
Kazakov, Nikolai Efimovich; Shipitsin, Svyatoslav Sergeevich; Minchenko, Veniamin Alexandrovich; Kudryavtsev, Innokenty Mikhailovich; Zimin, Vladimir Afanasievich; and Pervitsky, Boris Antonovich, 3,849,046.

Kuehn, Donald E.; and Lyon, J. Keith, to TRW Inc. Method of attaching a fastener to a support with an air operated gun. 3,848,322, Cl. 29-453.000.

Kuehnhanss, Gerhard O., to Ethyl Corporation. Process of converting sultones to hydroxyalkylsulfonates. 3,849,486, Cl. 260-513.00r.

Kuffner, Karl; and Glockner, Hans, to Agfa-Gevaert Aktiengesellschaft. Diffusion-resistant dispersible yellow couplers for the production of photographic color images. 3,849,140, Cl. 96-100.000.

Kuhl, Hans. Energy transformer for securing a safety belt on a seat of a vehicle. 3,848,828, Cl. 242-107.300.

Kuhlmann, Ugine: *See—*
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Kuki, Akio: *See—*
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Kukino, Yoshinori: *See—*
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Kulart Victor Corporation: *See—*
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Kulik, Joseph S., Jr.: *See—*
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Kull, Leo. Rotating egg coloring device. 3,848,564, Cl. 118-13.000.

Kumiai Chemical Industry Co., Ltd.: *See—*
Kato, Yoshiro; and Kado, Masaru, 3,849,109.

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Kuninaka, Akira: *See—*
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Kunsman, Laurence D. High strength high conductivity aluminum alloy windings in large core form transformers. 3,849,210, Cl. 148-12.700.

Kuper, Heinrich: *See—*
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Kurahashi, Akira: *See—*
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Kuramizu, Masaru: *See—*
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Kurashina, Kozo: *See—*
Arimura, Ichiro; Higashida, Yutaka; and Kurashina, Kozo, 3,849,794.

Kurihara, Norman H.; and Bublitz, Donald E., to Dow Chemical Company, The. Chloro-p-dithiimo pyridazine-dicarbonitriles. 3,849,415, Cl. 260-250.0ac.

Kurio, Noriyuki, to Toyo Kogyo Co., Ltd. Rotary piston type engine. 3,849,038, Cl. 418-142.000.

Kurita, Yuko; Kawanishi, Yasuhiro; Yoshikawa, Katsuji; and Tanaka, Kiyoshi, to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd. Structure for supporting a motor-compressor unit in a housing. 3,849,028, Cl. 417-363.000.

Kuroishi, Kenitiro, to MHK Spring Co., Ltd. Occupant seat. 3,848,926, Cl. 297-452.000.

Kusters, Norbert L.; and Moore, William J. M., to Canadian Patents and Development Limited. Current comparator for power and energy measurements. 3,849,727, Cl. 324-142.000.

Kuts, Mathew, to Goodrich, B. F., Company, The. Fabric cutting. 3,848,501, Cl. 83-471.300.

Kuwamura, Hideaki; Kashiwa, Ichiro; Hirabayashi, Takashi; and Tamura, Tadayoshi, to Lion Fat and Oil Company Limited. Process for preparing granular detergent composition. 3,849,346, Cl. 252-531.000.

Kydd, Paul H., to General Electric Company. Manufacture of fluid-cooled gas turbine airfoils. 3,848,307, Cl. 29-156.80b.

Kykhno, Semen Leonidovich: *See—*
Gurevich, Samuil Mordkovich; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Manoilo, Sergei Afanasievich; and Kykhno, Semen Leonidovich, 3,849,211.

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La-Z-Boy Chair Company: *See—*
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Labaz: *See—*
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Lacaze, Leonard, Jr., to Ford Motor Company. Apparatus for controlling an inflatable safety device. 3,848,695, Cl. 180-103.000.

Ladenburg, Kurt: *See—*
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Laflin, Reginald E., to A.P.V. Paralec Limited. Furnaces. 3,849,585, Cl. 13-26.000.

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Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich, 3,849,584.

Lamberti, Vincent, to Lever Brothers Company. Ester-linked derivatives of carbohydrates as builders for detergent compositions. 3,849,341, Cl. 252-546.000.

Lambrich, Hans Peter: *See—*
Peter, Rene; and Lambrich, Hans Peter, 3,849,696.

Lancaster, Paul M.; and Paquet, Eugene H., to Whitney, W. A., Corporation. Press for punching holes in tubular members. 3,848,497, Cl. 83-192.000.

Land, Edwin H., to Polaroid Corporation. Self-cleaning photographic transparency processing and projection system. 3,848,979, Cl. 352-48.00r.

Landy, Arney, Jr.: *See—*
Dulebohn, David H.; Landy, Arney, Jr.; and Brandt, Roy Earl, 3,849,624.

Langenhoff, Hubert Heinrich: *See—*
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Langlet, Andre: *See—*
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Langsdorf, William P., Jr.: *See—*
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Lankford, Larry G.; and Whittle, William R., to International Business Machines Corporation. Adaptive numerically controlled machine tool responsive to deflection forces on the tool normal to the cutting path. 3,849,712, Cl. 318-561.000.

Lansing Bagnall Limited: *See—*
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Larox Research Corporation: *See—*
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Larsen, Larry D.; and Kompelien, Arlon D., to Honeywell Inc. Ionization chamber with recessed radioactive body. 3,849,685, Cl. 313-54.000.

Larsson, John Roland, to Aktiebolaget Assa. Pressure converter. 3,848,414, Cl. 60-593.000.

Lartigau, Guy: *See—*
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Lashley, James C.: *See—*
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Laumann, Volker: *See—*
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Laurent, Daniel; and Ligones, Hubert, to Societe Dauphinoise Electrique. Ball-joint support device for a rail conductor of a current-collecting system. 3,848,713, Cl. 191-32.000.

Laurent, Jean: *See—*
Girard, Andre; and Laurent, Jean, 3,849,005.

Lawlor, James J., to P.D.Q. Plastics, Inc. Pallet. 3,848,546, Cl. 108-52.000.

Lawrence, Lu. Method for comparison using simultaneous displays on a visual monitor. 3,849,596, Cl. 178-6.800.

Lawrence, Thomas Russell; and Saltzberg, Burton R., to Bell Telephone Laboratories Incorporated. Interface apparatus for receiving and monitoring pilot signals which control a timing signal generator. 3,849,733, Cl. 328-155.000.

Lazzarini, Louis P., 1/2 to Hanscom, Genevieve I. and 1/2 to Hanscom, Genevieve I., Magnuson, Robert, and Thompson, Louis J., as Trustees of the Estate of Magnuson, Roy M., deceased. Rotary slicer for fruits and vegetables. 3,848,498, Cl. 83-401.000.

Le Page, Madeleine: *See—*
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Leach, James A.: *See—*
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Leanza, William J.: *See—*
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Leather, Russell Allan: *See—*
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LeBegue, Maurice K., to National Mine Service Company. Continuous mining machine with drive to angled end sections. 3,848,930, Cl. 299-76.000.

Leclercq, Michel: *See—*
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Lectrosonics, Inc.: *See—*
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Lee, Raymond, Organization, Inc., The: *See—*
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Leggett, Peter Alfred: *See—*
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Legler, John G., to Skil Corporation. Impact clutch mechanism. 3,848,680, Cl. 173-93.500.

Lehtovaara, Jorma J., to Lonnstrom Oy. Method and apparatus for forming a support lug of a cathode starting sheet assembly. 3,848,326, Cl. 29-525.000.

Leibrick, Peter; and Terry, Nick H., to Butz Engineering Corporation. Conveyor and sorting system. 3,848,728, Cl. 198-155.000.

Leidig, Raymond H. Rim power hydraulic motor. 3,849,039, Cl. 418-165.000.

Leidl, Peter: *See—*
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Leighton, Peter Watson, to Lucas Electrical Company Limited, The. Capacitors. 3,849,708, Cl. 317-260.000.

Leistner, Werner, to Siemens Aktiengesellschaft. Pole element for a synchronous electric machine having a laminated link rotor. 3,849,683, Cl. 310-218.000.

Lemanski, Chester G., to Mobil Oil Corporation. Use of thiadiazole hydrazones as bactericides. 3,849,567, Cl. 424-270.000.

Leng, John Lindley: *See—*
Corby, Neville Slater; Hunter, James Stuart; and Leng, John Lindley, 3,849,393.

Lengnick, Guenther Fritz, to Stauffer Chemical Company. Room temperature curable organopolysiloxanes. 3,849,462, Cl. 260-448.20d.

Leonard, Charles E., to General Electric Company. Subject integument spatial stimulator. 3,848,608, Cl. 128-419.00r.

Leutwyler, Roy: *See—*
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Lever Brothers Company: *See—*
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Levey, John S. Decorative room air treating device. 3,848,803, Cl. 239-59.000.

Levine, Joel Martin: *See—*
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Levy, Leon M., to Selfix, Inc. Fixture assembly. 3,848,843, Cl. 248-224.000.

Levy, Louis: *See—*
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Lewis, Richard L., to Bendix Corporation, The. Vehicle braking systems having height sensing proportioning valve. 3,848,932, Cl. 303-6.00c.

Lewis, Sheldon N.; and Miller, George A., to Rohm and Haas Company. Process for the preparation of 3-isothiazolones and 3-hydroxyisothiazoles. 3,849,430, Cl. 260-302.00a.

Libbey-Owens-Ford Company: *See—*
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Libit, Sidney M. Child-proof closures. 3,848,761, Cl. 215-220.000.

Licentia Patent-Verwaltungs GmbH: *See—*
Forster, Johannes; Bezold, Karl-Heinz; and Neihage, Helmut, 3,849,718.

Licentia Patent-Verwaltungs-GmbH: *See—*
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Lilly, Eli, and Company: *See—*
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Shields, James E., 3,849,389.
Soper, Quentin F.; and Kline, Granville B., 3,849,110.

Linam, Richard Lee; and Sheehan, Hilary W., to Kelso Marine, Inc. Apparatus for controlling the welding pattern between weldment components. 3,849,626, Cl. 219-124.000.

Linder, Bernd, to General Electric Company. Method of drying coated wires. 3,848,341, Cl. 34-25.000.

Linder, Fritz. Substrate-containing test container. 3,849,256, Cl. 195-139.000.

Lindstrom, Roald E.: *See—*
Scheiner, Bernard J.; Lindstrom, Roald E.; and Henrie, Thomas A., 3,849,265.

Lines, Walter M.; Alsop, Alfred N.; and Ross, Edgar A. Wheeled trolley. 3,848,884, Cl. 280-36.00b.

Lingl Corporation: *See—*
Lingl, Hans, 3,849,228.

Lingl, Hans, to Lingl Corporation. Method and apparatus to construct wall panels. 3,849,228, Cl. 156-297.000.

Linhart, James T.; Crosswell, Flay D.; and Galbreath, Gerald W. Cargo deflector panel. 3,848,920, Cl. 296-106.000.

Link, Donald A.; and Williams, Fred H., to Cutler-Hammer, Inc. Electric circuit breakers. 3,849,751, Cl. 337-59.000.

Linning, David Lees. Indicators for indicating accelerations in sports equipment which are swung in use. 3,848,873, Cl. 273-186.00a.

Lion Fat and Oil Company Limited: *See—*
Kuwamura, Hideaki; Kashiwa, Ichiro; Hirabayashi, Takashi; and Tamura, Tadayoshi, 3,849,346.

Lisk Savory Corporation: *See—*
Malisz, John M., 3,849,620.

Littlewood, Peter Stuart: *See—*
Basel, Horst Aebli; Fleck, Fritz; Littlewood, Peter Stuart; and Mercer, Alec Victor, 3,849,406.

Litton Systems, Inc.: *See—*
Rosenheck, Bernard M., 3,849,592.

Lively, David H.: *See—*
Delong, Donald C.; Lively, David H.; and Neuss, Norbert, 3,849,419.

Livingston, Clifton W. Mining method using control blasting. 3,848,927, Cl. 299-13.000.

Livingston, David T., to Reinell Boats, Inc. Stringer system for glass fiber-reinforced boat hulls. 3,848,284, Cl. 9-6.000.

Lloyd, Keith Andrew; and Fisher, Eugene Jay, to Union Carbide Corporation. Semi-conducting polymer system comprising a copolymer of ethylene-ethyl acrylate or vinyl acetate, ethylene-propylene-termonomer and carbon black. 3,849,333, Cl. 252-511.000.

Lloyd, William G.; and Rowe, Donald R., to Larox Research Corporation. Palladium compositions suitable as oxidation catalysts. 3,849,336, Cl. 252-438.000.

Lockard, Joseph Larue; and Rose, William Henry, to AMP Incorporated. Slide switch with individual slide operations. 3,849,610, Cl. 200-5.00r.

Lockheed Aircraft Corporation: *See—*
Kilgore, Roy L., 3,848,662.
Weber, Kenneth E.; Crozier, Donald G.; and Hawley, Wilbur W. (said Weber and said Crozier assors. to), 3,849,264.

Lockie, Arthur M.; and Hatch, Jeffrey A., to Westinghouse Electric Corporation. Electrical connector for tapping a concentric electrical cable. 3,848,955, Cl. 339-97.00r.

Loebs, Richard G.: *See—*
Gobble, Glenn R.; and Loebs, Richard G., 3,849,078.
Gobble, Glenn R.; and Loebs, Richard G., 3,849,122.

Loeffler, Earl Ferdnand: *See—*
Brey, Wilhelm; Hostetler, William; Loeffler, Earl Ferdnand; Kolm, Hubert Ernest; and Elder, Fred Grove, 3,849,231.

Loft, Bryan Clarence: *See—*
Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, 3,849,149.

London, Joe F., Jr., to Burlington Industries, Inc. Intermittent texturized yarn and false-twist apparatus and process for producing the same. 3,848,404, Cl. 57-34.0hs.

Long, Robert Byron, to Esso Research and Engineering Company. Process for removing metals from petroleum residua. 3,849,297, Cl. 208-251.00r.

Lonnberg, Lars: *See—*
Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar K:Son; and Lonnberg, Lars, 3,848,877.

Lonnstrom Oy: *See—*
Lehtovaara, Jorma J., 3,848,326.

Loofbourow, Robert L. Storage of gas in underground excavation. 3,848,427, Cl. 62-260.000.

Lopata, Karl Peter, to Kleinewefers Industrie Companie GmbH. Device for impregnating and dyeing wide textile webs. 3,848,439, Cl. 68-184.000.

Lopker, Edwin B., to Pullman Incorporated, mesne. Belt for a vacuum filter. 3,849,313, Cl. 210-400.000.

Lourigan, Ronald F., to Webster Electric Company, Inc. SCR commutation circuit for current pulse generators. 3,849,670, Cl. 307-108.000.

Louthan, Rector P., to Philipps Petroleum Company. Process for making polymercaptans. 3,849,443, Cl. 260-327.00r.

Lovness, William R.; and Feldhaus, James F., to Minnesota Mining and Manufacturing Company. Apparatus for treating objects with particles moved by magnetic force. 3,848,363, Cl. 51-7.000.

Loweth, Carl V.: *See—*
Porter, James M.; Loweth, Carl V.; and Gilster, Kenneth W., 3,848,430.

Lu, John Hsueh Chung: *See—*
Wang, Kuei-Send; Epstein, Philip L.; and Lu, John Hsueh Chung, 3,849,764.

Lucas Electrical Company Limited, The: *See—*
Leighton, Peter Watson, 3,849,708.

Lucas, Robert G., to Beloit Corporation. Variable curvature beam. 3,848,304, Cl. 29-116.0ad.

Luck, Allan J.: *See—*

Eaton, James W.; and Luck, Allan J., 3,848,384.

Lueschen, William J.: *See*—
Sejpal, Vasant D.; Lueschen, William J.; and Weinstein, Bernard, 3,849,580.

Luethi, Christian: *See*—
Eigenmann, Gottfried; Kaiser, Leo; and Luethi, Christian, 3,849,155.

Lukacs, George J.: *See*—
Drelich, Arthur H.; and Lukacs, George J., 3,849,173.

Lummus Company, The: *See*—
Kniel, Ludwig, 3,849,096.

Lundholm, Sven Gunnar K:Son: *See*—
Bengtsson, John Ingemar; Hakansson, Sven Anders Samuel; Lundholm, Sven Gunnar K:Son; and Lonnberg, Lars, 3,848,877.

Luppino, Antonio, to PPG Industries, Inc. Tempering glass sheets. 3,849,100, Cl. 65-348.000.

Lutts, Carlton G.: *See*—
Fuller, George A., Jr.; Langevin, Wilfred L.; Lutts, Carlton G.; and Neiley, Geoffrey C., Jr., 3,848,866.

Lyashenko, Ivan Vasilievich: *See*—
Chukhanov, Zinovy Zinovievich; Chukhanov, Zinovy Fedorovich; Panov, Vladimir Illarionovich; Nikolaev, Anatoly Mikhailovich; Tsuprov, Sergei Andreevich; and Lyashenko, Ivan Vasilievich, 3,848,536.

Lykov, Mikhail Vasilievich; Rybalchenko, Gleb Fedorovich; Korotkov, Mikhail Alexeevich; Dobrovolsky, Evgeny Ivanovich; Rudenko, Inna Lukinichna; Avilov, Oleg Vladimirovich; and Bljumberg, Yakov Benedictovich; deceased (by Bljumberg, Anna Benedictovna; executrix). Method of production of granulated product. 3,849,233, Cl. 159-48.00r.

Lyon, J. Keith: *See*—
Kuehn, Donald E.; and Lyon, J. Keith, 3,848,322.

M&T Chemicals Inc.: *See*—
Daniels, David A.; and Davis, William R., 3,849,460.

Ma, Gabriel W. C.; and Poulson, Don E. Method for interbody fusion of the spine. 3,848,601, Cl. 128-305.000.

Maass, Gunter; Engel, Frederico; Bernemann, Paul; and Blumel, Harald, to Chemische Werk Huls Aktiengesellschaft. Process for the production of homogenous rubber-silica mixtures. 3,849,363, Cl. 260-3.6aq.

MacAlpine, Alexander D. Coupling for connecting tandem trailer to bicycle. 3,848,890, Cl. 280-204.000.

MacDowell, John F.: *See*—
Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., 3,849,097.

MacKay, James D.: *See*—
Gade, John N.; and MacKay, James D., 3,848,315.

Mackey, Walter J. Process of preparing skeletal-vascular casts. 3,848,346, Cl. 35-20.000.

Maddox, Jim, Jr.; and Tao, Fan-Sheng, to Texaco, Inc. Method of sweetening natural gas. 3,849,540, Cl. 423-224.000.

Madrid, Robert W.; and Hagenbach, Robert J., to Xerox Corporation. Electrostatographic process in which coated carrier particles are used. 3,849,127, Cl. 96-1.0sd.

Maeda, Hidenori; Matsui, Yujiro; Ikeda, Tsukasa; and Mohri, Eikichi, to Taisei Kensetsu Kabushiki Kaisha. Waste gas collecting device of converter. 3,848,860, Cl. 266-18.000.

Maeda, Nobutaka: *See*—
Iwasaki, Yasuhiro; Tsukamoto, Hidehiko; Maeda, Nobutaka; and Takeuchi, Chikara, 3,848,446.

Maeda, Tadao: *See*—
Nakamura, Toshio; Maeda, Tadao; Takenaka, Hiroshi; and Yamahira, Yoshiya, 3,849,558.

Maeder, Erwin: *See*—
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,849,163.

Maggs, Frederick Arthur Pomroy: *See*—
Bailey, Alan; Maggs, Frederick Arthur Pomroy; and Williams, John Herbert, 3,849,332.

Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E. N-substituted fatty acid amide lubricants. 3,849,321, Cl. 252-46.700.

Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., to United States of America, Agriculture. N-substituted fatty acid amide lubricants. 3,849,454, Cl. 260-403.000.

Magrini-Fabbriche Riunite Magrini-Scarpa e Magnano M.S.M. S.p.A.: *See*—
Calvino y Teijeiro, Benito Jose, 3,849,616.

Maier, Ludwig, to Monsanto Company. Phosphorus compounds containing the atom skeleton P-(C-P)$_2$ or P-(C-P)$_3$. 3,849,523, Cl. 260-932.000.

Mainard, Douglas Raymond: *See*—
Beasley, Robert Malcolm; Mainard, Douglas Raymond; and Washington, Derek, 3,849,692.

Maitlis, Peter M.; White, Colin; Kang, Jung W.; and Gill, Devinder S., to Canadian Patents and Development Limited. Catalylic compounds and processes for their preparation. 3,849,459, Cl. 260-429.0cy.

Makeham, Sam Robert, to Massey-Ferguson (Australia) Limited. Sugar cane harvesters. 3,848,399, Cl. 56-13.900.

Makihara, Hiroshi: *See*—
Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.

Malievsky, Alexandr Dmitrievich; Vints, Viktor Vladimirovich; Emanuel, Nikolai Markovich; and Parfenov, Viktor Nikolaevich. Method for preparing sulfoxides and sulfones. 3,849,499, Cl. 260-607.00a.

Malisz, John M., to Lisk Savory Corporation. Deadman control. 3,849,620, Cl. 200-157.000.

Malnaison, Nadella Ruid: *See*—
Pitner, Alfred, 3,848,939.

Maloney, Thomas C.; and Miller, Donald E., to Burroughs Corporation. Display panel having rows and columns of cells with wide viewing angle. 3,849,688, Cl. 313-188.000.

Maltby, Robert E., Jr.; and O'Connell, Thomas B., to Libbey-Owens-Ford Company. Scanning apparatus for measuring glass temperatures. 3,849,099, Cl. 65-158.000.

Malvin, Harry Herbert. Fluorescence cuvette. 3,849,654, Cl. 250-363.000.

Malzahn, Wayne R.: *See*—
Blagdon, Peter A.; Malzahn, Wayne R.; and Fujiwara, Huygene K., 3,849,582.

Mammino, Joseph: *See*—
Wells, John B.; and Mammino, Joseph, 3,849,132.

Manara, Giovanni; and Fattore, Vittorio, to Snam Progetti, S.p.A. Process for the preparation of oxidation catalysts and catalysts obtained thereby. 3,849,337, Cl. 252-439.000.

Mangold, Dietrich; Fischer, Adolf; Rohr, Wolfgang; and Hamprecht, Gerhard, to BASF Aktiengesellschaft. Substituted O-(aminosulfonyl)-glycolic anilides. 3,849,467, Cl. 264-456.00a.

Manjikian, Serop. Reverse osmosis water purifying system for household use. 3,849,305, Cl. 210-23.000.

Manning, Harold E., to Petro-Tex Chemical Corporation. Oxidative dehydrogenation with manganese ferrite catalysts. 3,849,511, Cl. 260-680.00e.

Manoilo, Sergei Afanasievich: *See*—
Gurevich, Samuil Mordkovich; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Manoilo, Sergei Afanasievich; and Kykhno, Semen Leonidovich, 3,849,211.

Manuel, Larry N.; deceased (by Manuel, Ruby Joy; administratrix). Padlock case. 3,848,440, Cl. 70-55.000.

Manuel, Ruby Joy: *See*—
Manuel, Larry N., 3,848,440.

Manyek, Leonard F., to Stanray Corporation. Tandem wheel truing machine. 3,848,513, Cl. 90-16.000.

Marchione, Joseph H.; and Skubal, John J., to Atwood Vacuum Machine Company, The. Dual action conical door hinge system. 3,848,293, Cl. 16-163.000.

Mardla, Ilmar: *See*—
Jysky, Goran; Mardla, Ilmar; and Ericsson, Bjorn, 3,848,686.

Mareschal, Jean: *See*—
Ferrand, Bernard; Forrat, Francis; Grange, Yves; Joubert, Jean-Claude; and Mareschal, Jean, 3,849,193.

Marhold, Werner: *See*—
Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., 3,849,053.

Marine Colloids Inc.: *See*—
Moirano, Arthur L., 3,849,395.

Marks, Alvin M. Forced closure dipolar electro-optic shutter and method. 3,848,964, Cl. 350-160.00r.

Marlin, Lawrence; and Schwarz, Eric George, to Union Carbide Corporation. Process for providing a backing on carpets. 3,849,156, Cl. 117-10.000.

Marosi, Michael N., to Convertex, Ltd. Aluminum element having integral sepia surface and method therefor. 3,849,207, Cl. 148-6.270.

Marosi, Michael N., to Convertex, Ltd. White, opaque conversion coating on aluminum. 3,849,208, Cl. 148-6.270.

Marsh, Frank Dennis, to Du Pont de Nemours, E. I., and Company. N-cyanoimines and N-cyanoaziridines. 3,849,465, Cl. 260-453.00r.

Marsh, Paul G.; and Chupka, David E., to Black Clawson Fibreclaim Inc. Separation of greasy liquids and recovery of paper fiber from municipal refuse. 3,849,245, Cl. 162-4.000.

Martin, Ames R., to General Motors Corporation. Sheet metal piston for transmissions and method of making a piston assembly. 3,848,518, Cl. 92-107.000.

Martin, Theodore T.; and Allen, Marvin C., to Continental Oil Company. Method for the separation of saturated from unsaturated compounds. 3,849,300, Cl. 208-310.000.

Martinez, Isidore M. Knee implant device. 3,848,276, Cl. 3-1.000.

Martucci, John Anthony, to Combustion Engineering, Inc. Light water reactor primary coolant leakage monitor. 3,849,655, Cl. 250-366.000.

Maruto, Shunsuke: *See*—
Iwasa, Junzo; Maruto, Shunsuke; Ikeda, Noboru; Nakamura, Keiji; and Shoji, Yukinobu, 3,849,561.

Maruyama, Katsuji: *See*—
Tsujimoto, Noboru; Maruyama, Katsuji; and Misawa, Haruo, 3,848,976.

Maruyama, Tadasatsu: *See*—
Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, 3,849,209.

Marvel Engineering Company: *See*—
Niccum, Forest G.; and Heinrich, Peter, Jr., 3,849,314.

Marwitz, Heinrich: *See*—
Nitzsche, Siegfried; Marwitz, Heinrich; and Hockemeyer, Friedrich, 3,849,359.

Mary, Dominique: *See—*
Bussienne, Christian; and Mary, Dominique, 3,848,755.
Masai, Tadahisa; and Atago, Takeshi, to Hitachi, Ltd. Vortex blower. 3,849,024, Cl. 415-213.00t.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Zechmeister, Hartwin, 3,849,080.
Mason Company, The: *See—*
Hawke, Earle G., 3,848,517.
Mason, Raymond J., to Minarik Electric Co. Motor speed control circuit. 3,849,710, Cl. 318-331.000.
Mason, Robert J.; and Dixon, Earl, to United States of America, Navy. Mounting assembly for ferrimagnetic core in waveguide phase shifter. 3,849,746, Cl. 333-24.100.
Masonite Corporation: *See—*
Eaton, James W.; and Luck, Allan J., 3,848,384.
Maspero, Federico; and Perrotti, Emilio, to Snam Progetti, S.p.A. Hydrogen transfer process. 3,849,510, Cl. 260-680.00r.
Massa Division, Dynamics Corporation of America: *See—*
Massa, Frank, 3,849,679.
Massa, Frank, to Massa Division, Dynamics Corporation of America. Electroacoustic transducer with controlled beam pattern. 3,849,679, Cl. 310-8.200.
Massek, Peter: *See—*
Schmidt, Fritz; Matthaus, Gunther; and Massek, Peter, 3,849,589.
Massey-Ferguson (Australia) Limited: *See—*
Makeham, Sam Robert, 3,848,399.
Mast, Aquila D., to Sperry Rand Corporation. Hay roll forming machine. 3,848,526, Cl. 100-88.000.
Masuda, Katsumi: *See—*
Hongo, Eitaro; Yamada, Hirohiko; Fujii, Yozo; Masuda, Katsumi; Itou, Junichi; and Nakano, Takaaki, 3,849,452.
Masuko, Fujio: *See—*
Oshima, Teruo; Nagase, Tsuneyuki; Masuko, Fujio; Wada, Takeshi; Hirooka, Masaaki; and Taniguchi, Isoji, 3,849,385.
Mathews, Dixie I. Apertured article and protective cover therefor. 3,848,281, Cl. 5-337.000.
Matsko, John, to United States of America, Atomic Energy Commission. Process of making low density syntactic foams. 3,849,350, Cl. 260-2.50b.
Matsuda, Motonobu: *See—*
Nanba, Yasuhiro; and Matsuda, Motonobu, 3,849,786.
Matsuda, Yoshio: *See—*
Terada, Fumio; Matsuda, Yoshio; and Yamaguchi, Yoshiharu, 3,848,556.
Matsuhita Electric Industrial Co., Ltd.: *See—*
Kadota, Tokuzo, 3,849,749.
Matsui, Akio; Hasegawa, Yuji; and Fujimoto, Hiroshi, to Kawasaki Jukogyo Kabushiki Kaisha. Mixture for making a mold. 3,849,356, Cl. 260-29.300.
Matsui, Masao: *See—*
Ando, Satoshi; Matsui, Masao; and Ogata, Fumimaro, 3,849,044.
Matsui, Masashi; and Horio, Teisuke, to Nissan Motor Company, Limited. Torsional damper for motor vehicle drive train. 3,848,694, Cl. 180-70.00p.
Matsui, Yujiro: *See—*
Maeda, Hidenori; Matsui, Yujiro; Ikeda, Tsukasa; and Mohri, Eikichi, 3,848,860.
Matsumoto, Hisao: *See—*
Kazaoka, Kenichi; Hirose, Kimiharu; Matsumoto, Hisao; and Takeshita, Yasuo, 3,848,888.
Matsumoto, Koichi: *See—*
Inoue, Masaru; Kaneko, Toshio; Matsumoto, Koichi; Ishikawa, Makoto; and Akitomo, Nobuo, 3,849,001.
Matsumura, Mutsuo: *See—*
Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, 3,849,590.
Matsuo, Tetsuo: *See—*
Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, 3,849,298.
Matsushita Electric Industrial Co., Ltd.: *See—*
Arimura, Ichiro; Higashida, Yutaka; and Kurashina, Kozo, 3,849,794.
Katahira, Toshiaki; Izumi, Hiroshi; and Tokonami, Masao, 3,849,773.
Koda, Minoru; Shioyama, Tadao; and Nishiyama, Akio, 3,849,795.
Miyoshi, Seizo, 3,848,875.
Omiya, Shoji; Hayashi, Yoshiaki; and Kuki, Akio, 3,849,796.
Matsushita Electrical Industrial Co., Ltd.: *See—*
Hamano, Goro, 3,849,765.
Matsuyama, Shigeru: *See—*
Sato, Yasumasa; Matsuyama, Shigeru; and Kobayashi, Masaaki, 3,848,655.
Matsuzaki, Kunio: *See—*
Shimamura, Akira; and Matsuzaki, Kunio, 3,849,703.
Mattera, John A.; deceased (by Mattera, Sadie; executrix). Hydraulically actuated cable cutter and indentor. 3,848,334, Cl. 30-180.000.
Mattera, Sadie: *See—*
Mattera, John A., 3,848,334.
Matthaus, Gunther: *See—*
Schmidt, Fritz; Matthaus, Gunther; and Massek, Peter, 3,849,589.
Mattson, Gary L.: *See—*
Goretzki, Jerome A.; Hendrickson, Kenneth E.; Mattson, Gary L.; and Mattson, Larry F., 3,849,714.
Mattson, Larry F.: *See—*
Goretzki, Jerome A.; Hendrickson, Kenneth E.; Mattson, Gary L.; and Mattson, Larry F., 3,849,714.
Maurer, Fritz: *See—*
Colln, Reimer; Hofer, Wolfgang; Maurer, Fritz; and Rohe, Lothar, 3,849,524.
Maxey, Joel W., to Ford Motor Company. Expandable hub locking assembly. 3,849,014, Cl. 403-370.000.
May, Adolf: *See—*
Diery, Helmut; Cuntze, Ulrich; May, Adolf; and Milewski, Eckhard, 3,849,435.
Mayer, Friedrich, to Allgemeine Industrie Commerz. Device for producing a series of electrical pulses, whose frequency is proportional to the speed of rotation of the wheel of a motor vehicle. 3,848,878, Cl. 277-25.000.
Mayer, James F.; and Raimondi, Victor V., to Standard Oil Company. Flexible polyester based sealing composition. 3,849,367, Cl. 260-40.00r.
Mays, John D.; and McClannan, Jack L., to Standard Register Company, The. Coating composition for optical projection. 3,849,170, Cl. 117-36.300.
Maytag Company, The: *See—*
Rottering, Quintin N., 3,848,436.
Rottering, Quintin N., 3,848,437.
McAlister, Jimmie D. Rotary conveyor. 3,848,733, Cl. 198-211.000.
McArthur, Ralph F.; and Geurts, Melle F., to Kobe, Inc. Fluid operated pump with opposed pistons and valve in middle. 3,849,030, Cl. 417-393.000.
McCarthy, Jack N. Electric lamp cover adapter and cover. 3,849,640, Cl. 240-100.000.
McCartney, Frank I.: *See—*
Hollis, Norman E.; Jutte, Gottfried W.; McCartney, Frank I.; and McHugh, John V., 3,849,203.
McClannan, Jack L.: *See—*
Mays, John D.; and McClannan, Jack L., 3,849,170.
McClellan, Bingham A., to McClellan Industries, Inc. Rattle sounder for fishing lures. 3,848,353, Cl. 43-42.310.
McClellan Industries, Inc.: *See—*
McClellan, Bingham A., 3,848,353.
McClellan, William. Thermal shield. 3,848,897, Cl. 285-47.000.
McColl, Archibald Irvine, to Alexander M.S. Method and apparatus for fracturing oil and gas strata. 3,848,674, Cl. 166-299.000.
McCombs, Howard L., to Bendix Corporation, The. Control apparatus particularly for a plurality of compressor bleed valves of a gas turbine engine. 3,848,636, Cl. 137-624.270.
McCord Corporation: *See—*
Hulten, Richard E., 3,848,916.
McCormick, Larry L.; and Selk, Ben F., to G & H Technology, Inc. Electrical connector. 3,848,950, Cl. 339-90.00r.
McCoy, Frederic C. Process for converting ethoxylated alkyl mercaptans to their oil soluble form using alkylated phenols. 3,849,501, Cl. 260-609.00f.
McCullough, John R.: *See—*
Schramm, Harold J.; McCullough, John R.; and Yarnall, Joseph P., Jr., 3,848,623.
McDonald, Bernard. Ear, nose and throat examining instrument. 3,848,587, Cl. 128-9.000.
McDonald Products Corporation: *See—*
Beil, Volentin E., 3,848,769.
McDonnell, Douglas, Corporation: *See—*
Sheratte, Martin B., 3,849,324.
McDowell-Wellman Engineering Company: *See—*
Ban, Thomas E., 3,849,113.
Ban, Thomas Eugene, 3,849,115.
McElroy, David W., to Westinghouse Electric Corporation. Fluid-cooled transformer having a temperature responsive indicating and controlling device. 3,849,705, Cl. 317-14.00r.
McGann, John J., Jr. Locking device for door chains. 3,848,913, Cl. 292-264.000.
McGarrah, Larry: *See—*
Conaway, Mildred; Thompson, Alligene; Bowen, Dorsie Mae; Brown, Danny; and McGarrah, Larry, 3,848,266.
McGee, Paul D.; and Ulmer, Dalton C., to Motorola, Inc. Shipping and display carton assembly for an electronic device. 3,848,735, Cl. 206-45.250.
McGinnis, Paul H.; McLaughlin, William D., Jr.; and Swander, Robert E., to Celanese Corporation. Spinning apparatus with converging gas streams. 3,849,040, Cl. 425-72.000.
McGregor, Robert, & Sons Limited: *See—*
Cochrane, Kenneth Alfred; and Holloway, Robert Geofrey, 3,849,016.
McGregor, William H.; and Grant, Norman H., to American Home Products Corporation. H-Thr-Lys-Arg-OH and derivatives thereof. 3,849,390, Cl. 260-112.500.
McGrew-Edison Company: *See—*
Trelc, William F., 3,848,522.
McHugh, John V.: *See—*
Hollis, Norman E.; Jutte, Gottfried W.; McCartney, Frank I.; and McHugh, John V., 3,849,203.
McIlrath, William F. Strain control transducer. 3,848,462, Cl. 73-88.50r.

McKinlay, Philip F.; Smith, Harry D., Jr.; and Schultz, Ward E., to Texaco Inc. Inelastic neutron scattering methods to locate coal and oil shale zones. 3,849,646, Cl. 250-270.000.

McLaughlin, William D., Jr.: *See—*
McGinnis, Paul H.; McLaughlin, William D., Jr.; and Swander, Robert E., 3,849,040.

McMahon, Matthew A.: *See—*
Kreuz, Kenneth L.; and McMahon, Matthew A., 3,849,085.

McMullen, Charles H., to Union Carbide Corporation. Preparation of methyl alkanoates. 3,849,456, Cl. 260-410.90r.

McMurtry, Carl H.; and Murata, Yorihiro, to Carborundum Company, The. Solid diffusion sources containing phosphorus and silicon. 3,849,344, Cl. 252-500.000.

Mead Corporation, The: *See—*
Sanders, Frederick W., 3,849,278.

Mead, Robert James, to Glaxo Laboratories Limited. Composition containing procaine penicillin. 3,849,569, Cl. 424-271.000.

Means, Graham Neville: *See—*
Chick, Orest Nicholas; and Means, Graham Neville, 3,849,183.

Medical Research Laboratories, Inc.: *See—*
Milani, Dean L.; and Kerwin, Richard G., 3,848,582.

Medovar, Boris Izrailevich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Kumysh, Ilya Iosifovich; Tsykulenko, Anatoly Konstantinovich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Bondarenko, Oleg Petrovich; and Bogachenko, Alexei Georgievich, 3,849,588.
Tetjuev, Vladimir Alexandrovich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Popov, Valery Georgievich; Tjurikov, Pavel Ivanovich; and Kosmatenko, Ivan Egorovich, 3,848,657.

Meeda Scientific Instrumentation Limited: *See—*
Otsap, Ben Amy, 3,848,584.
Otsap, Ben Amy; and Neuman, Eli, 3,848,585.

Mefferd, Wayne S., to Coherent Radiation Laboratories, Inc. Method of making a cored laser tube. 3,849,531, Cl. 264-92.000.

Megles, John E.: *See—*
Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., 3,849,097.

Meier-Windhorst, Christian August. Process for continuous treatment of webs with hot liquids. 3,849,068, Cl. 8-151.000.

Meijer, Roelf Jan: *See—*
Michels, Albertus Peter Johannes; Van Beukering, Henricus Cornelis Johannes; Fokker, Herman; and Meijer, Roelf Jan, 3,848,412.

Meinan Machinery Works, Inc.: *See—*
Hasegawa, Katsuji, 3,848,374.

Melanson, Alcide: *See—*
Hafner, Joseph A., 3,848,387.

Mellen, George P., to United States of America, Army. Self-destruct fuze. 3,848,531, Cl. 102-70.00r.

Melnik, Gary Alexandrovich: *See—*
Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich, 3,849,584.

Menissez, Jean Pierre: *See—*
Vaillant, Christian; and Menissez, Jean Pierre, 3,848,817.

Menissez, Jean-Pierre: *See—*
Vaillant, Christian; and Menissez, Jean-Pierre, 3,848,818.

Mennesson, Andre Louis, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Carburettors provided with a starting device with an eccentric flap valve. 3,848,857, Cl. 261-39.00b.

Mentha, John W.: *See—*
Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,849,407.
Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,849,470.

Mentha, John W.; Shaffner, Janice V.; and Cresswell, Ronald M., to Burrough Wellcome Co. Method and intermediates for the preparation of pyrimidine compounds. 3,849,416, Cl. 260-256.40n.

Mercer, Alec Victor: *See—*
Basel, Horst Aebli; Fleck, Fritz; Littlewood, Peter Stuart; and Mercer, Alec Victor, 3,849,406.

Merck & Co., Inc.: *See—*
Christensen, Burton G.; Leanza, William J.; and Beattie, Thomas R., 3,849,482.
Dempski, Robert E.; and Saboe, Joseph C., 3,849,549.
Witzel, Bruce E.; and Shen, Tsung-Ying, 3,849,572.

Merlino, Eugene Louis, Jr.; Brinning, Earl Edward; and Naeyaert, Roger Stanley, to Burroughs Corporation. Punched card, badge and credit card reader. 3,849,631, Cl. 235-61.11b.

Merriam, Charles J. Non-ionic fluid thermometer for microwave oven. 3,849,622, Cl. 219-10.550.

Merrill, Stewart H.: *See—*
Stahly, Frederick A.; and Merrill, Stewart H., 3,849,165.

Merriman, Henry H. High capacity inflatable hose fitting. 3,848,516, Cl. 92-92.000.

Mertanen, Pekka Henrikki, to Oy Wartsila AB. Bi-directional cylinder lock. 3,848,442, Cl. 70-366.000.

Merz, Josef; Van Esdonk, Johannes; and Janssen, Joannes Franciscus, to U.S. Philips Corporation. Prism holder for a digital light deflection system. 3,848,973, Cl. 350-287.000.

Mesek, Frederick K., to Johnson & Johnson. Disposable diaper with double contoured panel. 3,848,598, Cl. 128-287.000.

Meshberg, Philip. Childproof actuator assembly. 3,848,778, Cl. 222-402.110.

Meshorer, Asher: *See—*
Teitelbaum, Dvora; Gan, Ramat; Meshorer, Asher; Hirshfeld, Tsvi; Arnon, Ruth; and Sela, Michael, 3,849,550.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Born, Gunthard, 3,848,830.

Messmer, James I., to Florists' Transworld Delivery Association. Plant terrarium. 3,848,358, Cl. 47-34.000.

Messner, John S.; and Jones, Robert E., to Clark Equipment Company. Dual brake on drive and idler wheels of industrial trucks. 3,848,692, Cl. 180-52.000.

Metallwerk Max Brose & Co.: *See—*
Dehler, Bernhard, 3,848,923.

Metzger, Carl; and Eue, Ludwig, to Bayer Aktiengesellschaft. Certain thiadiazolyl-containing-halogen-substituted-imidazolidinones. 3,849,432, Cl. 260-306.80d.

Meyer, Hans Rudolf: *See—*
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,849,163.

Meyering, Otto; and Langenhoff, Hubert Heinrich, to Gebr. Schmeing. . 3,848,644, Cl. Weaving shuttle.

Meylan, Jean-Luc, to Battelle Memorial Institute. Process for cooling and supporting a continuously cast metal bar. 3,848,656, Cl. 164-89.000.

MHK Spring Co., Ltd.: *See—*
Kuroishi, Kenitiro, 3,848,926.

Miag Muhlenbau und Industrie GmbH: *See—*
Schlimme, Gisbert; and Tschirner, Manfred, 3,849,255.

Michael, Dietrich; Gilch, Heinrich; and Hechelhammer, Wilhelm, to Farbenfabrik Bayer Aktiengesellschaft. Process for the continuous production of fibre-reinforced polyamide moulding compositions. 3,849,154, Cl. 117-4.000.

Michaels, Leonard H.; and Romine, Edward L., to Molex Incorporated. Connector housings and locking structures therefor. 3,848,951, Cl. 339-91.00r.

Michel, Hans: *See—*
Karlikowski, Jupp; and Michel, Hans, 3,849,135.

Michels, Albertus Peter Johannes; Van Beukering, Henricus Cornelis Johannes; Fokker, Herman; and Meijer, Roelf Jan, to U.S. Philips Corporation. Method of supplying thermal energy to the heater of a hot-gas engine, as well as a hot-gas engine comprising a evice for carrying out the method. 3,848,412, Cl. 60-517.000.

Michigan Chemical Corporation: *See—*
Anderson, Arnold L., 3,849,369.

Middleton, Thomas E., to Pre-Stress Concrete, Inc. Method for manufacturing a sheathed cable for use in post-tensioning concrete structures. 3,849,221, Cl. 156-145.000.

Middleton, William Joseph, to Du Pont de Nemours, E. I., and Company. Trifluoromethylbenzophenone O-acyloximes useful as crop yield increasers for plants. 3,849,494, Cl. 260-566.0ae.

Midway Industries, Inc.: *See—*
Breford, Glenn H., 3,848,894.

Miele & Cie: *See—*
Kaup, Friedel; and Warnke, Heinrich, 3,849,175.

Miklas, Edward J., to Petro-Tex Chemicals Corporation. Zinc ferrite oxidative dehydrogenation catalyst and method of preparation. 3,849,545, Cl. 423-594.000.

Mikulak, John Paul, to Johns-Manville Corporation. Self seal system for the installation of insulation. 3,849,240, Cl. 161-167.000.

Milan, Lucien, to U.S. Philips Corporation. Printing device comprising electro-magnets. 3,848,719, Cl. 197-1.00r.

Milani, Dean L.; and Kerwin, Richard G., to Medical Research Laboratories, Inc. Portable electrocardiographic signal apparatus. 3,848,582, Cl. 128-2.06r.

Miles, Thomas R., to Hines, Edward, Lumber Co. Method and apparatus for cutting lumber to random or specified clear lengths. 3,848,646, Cl. 144-3.00n.

Milewski, Eckhard: *See—*
Diery, Helmut; Cuntze, Ulrich; May, Adolf; and Milewski, Eckhard, 3,849,435.

Miller, Donald E.: *See—*
Maloney, Thomas C.; and Miller, Donald E., 3,849,688.

Miller, George A.: *See—*
Lewis, Sheldon N.; and Miller, George A., 3,849,430.

Miller, Harold C., to Engelhard Minerals & Chemicals Corporation. Water applicator for a pavement grooving machine. 3,848,929, Cl. 299-39.000.

Miller, Herman, Inc.: *See—*
Propst, Robert L., 3,848,278.

Miller, Marvin E., to Warwick Electronics Inc. Method and apparatus for static and dynamic convergence. 3,849,697, Cl. 315-13.00c.

Milligan, Charles L.: *See—*
Patrick, Charles T., Jr.; and Milligan, Charles L., 3,848,600.

Million, Charles J. Means for and method of plotting plants. 3,848,360, Cl. 47-58.000.

Milstein, Donald; and Hill, Donald F., to Mobil Oil Corporation. Manufacture of transformer oils. 3,849,288, Cl. 208-14.000.

Mimeault, Victor J., to Ferro Corporation. Polysiloxane encapsulation of pigments. 3,849,152, Cl. 106-308.00q.

Mims, Bruce L., to Branson Instruments, Incorporated. Vibratory welding apparatus. 3,848,792, Cl. 228-1.000.

Minagawa, Katsumo: *See*—
Ohkawa, Shunjiro; and Minagawa, Katsumo, 3,849,045.
Minagawa, Motonobu; Akutsu, Mitsuo; and Nakagawa, Kenichi, to Argus Chemical Corporation. Enhancement of resistance of olefin polymers to heavy metal catalyzed oxidative degradation. 3,849,370, Cl. 260-45.80n.
Minarik Electric Co.: *See*—
Mason, Raymond J., 3,849,710.
Minchenko, Veniamin Alexandrovich: *See*—
Kazakov, Nikolai Efimovich; Shipitsin, Svyatoslav Sergeevich; Minchenko, Veniamin Alexandrovich; Kudryavtsev, Innokenty Mikhailovich; Zimin, Vladimir Afanasievich; and Pervitsky, Boris Antonovich, 3,849,046.
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Miner, William R.; and Parker, Charles K., Jr., to Chevron Research Company. Lubricating oil composition containing anti-wear agents. 3,849,318, Cl. 252-18.000.
Mingasson, Georges Raymond Henry; and Domergue, Annick Martha Suzanne Simone, to Kuhlmann, Ugine. 4-Naphthalimido cycloammonium-acrylic fiber compositions. 3,849,331, Cl. 252-301.20w.
Minnesota Mining & Manufacturing Co., mesne: *See*—
Knapp, Philip B., 3,849,041.
Minnesota Mining and Manufacturing Company: *See*—
Behymer, Donald James, 3,848,457.
Jorgensen, Jens L., 3,849,351.
Klaenhammer, Bryan L., 3,849,161.
Lovness, William R.; and Feldhaus, James F., 3,848,363.
Mitsch, Ronald A., 3,849,504.
Minolta Camera Kabushiki Kaisha: *See*—
Nanba, Yasuhiro; and Matsuda, Motonobu, 3,849,786.
Miquel, Joseph. Magnetotherapeutic devices. 3,848,588, Cl. 128-41.000.
Mirlin Corporation: *See*—
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Misawa, Haruo: *See*—
Tsujimoto, Noboru; Maruyama, Katsuji; and Misawa, Haruo, 3,848,976.
Mischenko, Alexandr Petrovich: *See*—
Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; and Aladyshev, Sergei Ivanovich, 3,849,076.
Mishcon, Lester; and Reagan, Donald W., to Singer Company, The. Cam section blocks for circular knitting machines. 3,848,432, Cl. 66-54.000.
Mitani, Toru: *See*—
Nakagome, Takenari; Agui, Hideo; Mitani, Toru; and Nakashita, Mitsuo, 3,849,421.
Mitchell, Bruce. Rapid transit system. 3,848,535, Cl. 104-88.000.
Mitchell, Derek, to Proctor & Schwartz, Inc., mesne. Web winding machine. 3,848,823, Cl. 242-56.00a.
Mitoff, Stephan P.: *See*—
Charles, Richard J.; and Mitoff, Stephan P., 3,849,200.
Mitsch, Ronald A., to Minnesota Mining and Manufacturing Company. Perfluoropolyethers and process for making. 3,849,504, Cl. 260-615.0bf.
Mitsubishi Chemical Industries, Limited: *See*—
Kikumoto, Ryoji, 3,849,476.
Mitsubishi Chemical Industries, Ltd.: *See*—
Arakawa, Tetsutaro; and Oka, Michio, 3,849,087.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Kasahara, Masao; Namekawa, Toshihiko; Fujiwra, Keniti; Hirasawa, Shigeiti; and Sugiyama, Yasuo, 3,849,761.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Iwasaki, Yasuhiro; Tsukamoto, Hidehiko; Maeda, Nobutaka; and Takeuchi, Chikara, 3,848,446.
Mitsui Toatsu Chemicals Inc.: *See*—
Kato, Yoshiro; and Kado, Masaru, 3,849,109.
Miura, Mitsuo: *See*—
Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685.
Miura, Sadayoshi: *See*—
Nakatsuji, Yasukuni; Kanai, Tamaki; Noda, Hiroshi; Miura, Sadayoshi; and Suzuki, Hideaki, 3,849,382.
Miyakawa, Seinan; and Noda, Nobuhiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera shutter controls for extremely short exposure time. 3,848,986, Cl. 354-51.000.
Miyakoshi, Hisashi: *See*—
Takase, Kunio; Miyakoshi, Hisashi; and Ohmura, Mitsuo, 3,848,418.
Miyamaoto, Nobuyuki; Nakamura, Kyosuke; and Nittani, Osamu, to Fuji Denka Seizo Kabushiki Kaisha Kawasaki-Shi. Method and system for preventing short-circuits in mercury cathode electrolytic cells. 3,849,268, Cl. 204-99.000.
Miyamoto, Hideaki: *See*—
Yonekura, Saku; Miyamoto, Hideaki; and Namba, Akio, 3,848,998.
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, to Nippon Kokan Kabushiki Kaisha. Electroplating and conveying apparatus featuring rotation of articles to be plated relative to cathode member. 3,849,277, Cl. 204-202.000.
Miyazaki, Togo, to Nippon Electric Company, Limited. Plasma display panel comprising a first external electrode for each digit and a second external electrode for each segment. 3,849,686, Cl. 313-484.000.
Miyoshi, Seizo, to Matsushita Electric Industrial Co., Ltd. Automatic record player. 3,848,875, Cl. 274-10.00r.
Mizutani, Masayoshi: *See*—
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Mobil Oil Corporation: *See*—
Anderson, James J.; Canacho, Vasco G.; and Kinney, Robert E., 3,849,368.
Bridger, Robert F.; Heibà, El-Ahmadi I.; and Stournas, Stamoulis, 3,849,320.
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Haag, Werner O.; and Whitehurst, Darrell Duayne, 3,849,457.
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Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,849,454.
Mod, William A.; and Enos, James H., to Dow Chemical Company, The. Production of magnesium metal. 3,849,118, Cl. 75-67.000.
Modrey, Henry J. Line coupling. 3,848,902, Cl. 285-237.00r.
Moffitt, Roy W., Company, The: *See*—
Seedorf, Robert R., 3,848,528.
Mogren, Hakan Lars; Hedenskog, Gudmund Oscar; and Enebo, Lennart Eugen, to SCP-Exploatering AB. Process for extracting protein from microorganisms. 3,848,812, Cl. 241-2.000.
Mohri, Eikichi: *See*—
Maeda, Hidenori; Matsui, Yujiro; Ikeda, Tsukasa; and Mohri, Eikichi, 3,848,860.
Moirano, Arthur L., to Marine Colloids Inc. Degraded modified seaweed extractive and compositions containing same and their production. 3,849,395, Cl. 260-209.00r.
Molack, Michael A., to Dynell Electronics Corporation. Phase detector circuitry. 3,849,671, Cl. 307-232.000.
Molex Incorporated: *See*—
Michaels, Leonard H.; and Romine, Edward L., 3,848,951.
Molinaro, Lawrence J.: *See*—
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Mollard, Gaston: *See*—
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Monaghan Automated Systems, Inc.: *See*—
Monoghan, Alfred C., 3,848,393.
Monajjem, Freydoun, to General Tire & Rubber Company, The. Apparatus for balance correcting pneumatic tires using reflective unbalance control. 3,848,369, Cl. 51-165.00r.
Monoghan, Alfred C., to Monaghan Automated Systems, Inc. Packaging machine and process. 3,848,393, Cl. 53-22.00a.
Monsanto Company: *See*—
Boustany, Kamel, 3,849,418.
Forster, Denis, 3,849,496.
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Montecatini Edison S.p.A.: *See*—
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Seberini, Febo; Valvassori, Alberto; Tavazzani, Carlo; and Pagliari, Alberto, 3,849,518.
Montillier, Jean-Pierre, to Pitney-Bowes, Inc. Organic photoconductive composition and electrophotographic member. 3,849,130, Cl. 96-1.500.
Montuelle, Jean; Chaudron, Georges; and Piaard-Legry, Gerard, to Agence Nationale de Valorisation de la Recherche (Anvar). Metallic materials based on martensitic steel. 3,849,079, Cl. 29-183.500.
Moore, William J. M.: *See*—
Kusters, Norbert L.; and Moore, William J. M., 3,849,727.
Morgan, John Edward, to Associated Pulp and Paper Mills Limited. Wet combustion of waste liquors. 3,849,536, Cl. 423-206.000.
Morgenthau, John L., Jr.: *See*—
Adler, Norman; Morgenthau, John L., Jr.; and Gold, Paul A., 3,848,773.
Mori, Chiharu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Circuit for switching different resistance values corresponding to amount of light measured. 3,849,725, Cl. 324-65.00r.
Mori, Masashi. Mat foundation. 3,848,377, Cl. 52-169.000.
Mori, Mitsuo: *See*—
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Morikuni, Yoshihiro: *See*—
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Morimoto, Hiroshi; Watanabe, Masazumi; Imada, Isuke; and Nishikawa, Masao, to Takeda Chemical Industries, Ltd. Quinone derivatives. 3,849,453, Cl. 260-396.00r.
Morita, Koji; and Sato, Tadashi, to Sony Corporation. Channel selecting control system for television tuner. 3,849,731, Cl. 325-464.000.
Moritz, Werner, to Kabelschlepp Gesellschaft mit beschrankter Haftung. Link structure for chains for supporting and guiding energy conveying conductors. 3,848,407, Cl. 59-78.100.

Morley, Douglas, to August's Limited. Milling machines. 3,848,816, Cl. 241u74.000.

Morningstar, Marion G., to Goodrich, B. F., Company, The. Internally coated reaction vessel and process for coating the same. 3,849,179, Cl. 117-97.000.

Morris, Earl F.: *See—*
Motley, Herman R.; Morris, Earl F.; and Pavlich, Joseph P., 3,849,316.

Morris, George R., to Ford Motor Company. Integral adjustment clutch fork. 3,848,479, Cl. 74-522.000.

Morris, Philip, Incorporated: *See—*
Iten, Clemens A., 3,848,770.

Morris, Wolford A. Food fryer with continuously filtered cooking oil. 3,849,309, Cl. 210-143.000.

Morrison, Howard J., to Glass, Marvin, & Associates. Dueling figure toys. 3,848,357, Cl. 46-142.000.

Morrison, Howard J., to Glass, Marvin, & Associates. Extensible riding toy. 3,848,869, Cl. 272-52.500.

Morse, George A., to Carpetech Corporation. Cleaning head for cleaning carpets and the like in situ. 3,848,291, Cl. 15-322.000.

Morse, John W., to Engineering Plastics, Inc. Process for producing a bearing. 3,848,306, Cl. 29-149.5nm.

Mortimer, Frans H.; Jacobs, Gerard O.; Decoene, Frans J. G. C.; Braet, August; and Rowland-Hill, Edward W., to Clayson N. V. Axial flow type harvesting machines. 3,848,609, Cl. 130-27.00t.

Mory, Rudolf: *See—*
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Mosler Safe Company, The: *See—*
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Proios, Steve, 3,849,603.

Motley, Herman R.; Morris, Earl F.; and Pavlich, Joseph P., to Dow Chemical Company, The. Spacer composition. 3,849,316, Cl. 252-8.50p.

Motorola, Inc.: *See—*
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Hall, Edward L.; and Philofsky, Elliott M., 3,848,330.
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Moumouloff, Paul: *See—*
Perry, Edward James; and Moumouloff, Paul, 3,848,664.

Mrenna, Stephen A.; and Thomas, Glenn R., to Westinghouse Electric Corporation. Circuit breaker with handle indicating means. 3,849,747, Cl. 335-166.000.

Muehloegger, Leopold, to Durst A.G. Fabrik Fototechnischer Apparate. Auxiliary lighting device for enlargers. 3,848,997, Cl. 355-71.000.

Mueller, Volkmar; Berendt, Hans-Ulrich; and Harris, Melvin, to Ciba-Geigy AG. Process for preventing the staining of polyamide fibre material treated with fluorescent whiteners. 3,849,162, Cl. 117-33.50t.

Mueller, Willy: *See—*
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Mueller-Tamm, Heinz: *See—*
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Muellerpoths, Reiner: *See—*
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Mukunashi, Hiroaki: *See—*
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Muller, Erwin, to Bayer Aktiengesellschaft. Process for the preparation of polyether/polyester block copolymers. 3,849,515, Cl. 260-860.000.

Muller, Paul Adolf; and Muster, Hans. Method of making webs of filter material. 3,849,526, Cl. 264-286.000.

Muller, Rudolf: *See—*
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Mulvey, Philip A.; and Porter, Kenneth G., to Perfect Pump Co. High pressure reciprocating pump. 3,849,032, Cl. 417-454.000.

Murata, Yorihiro: *See—*
McMurtry, Carl H.; and Murata, Yorihiro, 3,849,344.

Musick, Charles R.: *See—*
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Musschoot, Albert, to General Kinematics Corporation. Vertical lift conveyor. 3,848,343, Cl. 34-164.000.

Muster, Hans: *See—*
Muller, Paul Adolf; and Muster, Hans, 3,849,526.

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Imamura, Kennosuke; Nabekawa, Shukichi; and Takada, Masao, 3,849,439.

Nadelson, Jeffrey: *See—*
Houlihan, William J.; and Nadelson, Jeffrey, 3,849,438.

Naden, Robert W.: *See—*
Wilson, Robert J.; and Naden, Robert W., 3,848,383.

Nadherny, Rudolph E.: *See—*
Jensen, Finn; and Nadherny, Rudolph E., 3,848,912.

Naeyaert, Roger Stanley: *See—*
Merlino, Eugene Louis, Jr.; Brinning, Earl Edward; and Naeyaert, Roger Stanley, 3,849,631.

Naf, Willy B., to Koninklijke Emballage Industrie Van Leer B.V. Container with lid. 3,848,767, Cl. 220-59.000.

Nagai, Ikuo: *See—*
Inoue, Masakazu; Okamoto, Takehiko; and Nagai, Ikuo, 3,849,358.

Nagase, Tsuneyuki: *See—*
Oshima, Teruo; Nagase, Tsuneyuki; Masuko, Fujio; Wada, Takeshi; Hirooka, Masaaki; and Taniguchi, Isoji, 3,849,385.

Najjar, Edward G.: *See—*
Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., 3,849,169.

Nakagawa, Kenichi: *See—*
Minagawa, Motonobu; Akutsu, Mitsuo; and Nakagawa, Kenichi, 3,849,370.

Nakagawa, Tadashi, to Seiko Koki Kabushiki Kaisha. Lens shutter with pre-view device for a photographic camera. 3,849,787, Cl. 354-156.000.

Nakagome, Takenari; Agui, Hideo; Mitani, Toru; and Nakashita, Mitsuo, to Sumitomo Chemical Company, Limited. Process for the preparation of compound having antibacterial action and intermediate therefor. 3,849,421, Cl. 260-287.00r.

Nakajima, Shigeo, to Taiheiyo Coal Mining Co., Ltd. Pantographic wall protector and automatic controlling device thereof. 3,848,928, Cl. 299-33.000.

Nakamichi, Niro, to Nakamichi Research Incorporated. Magnetic recording and reproducing apparatus. 3,849,799, Cl. 360-96.000.

Nakamichi Research Incorporated: *See—*
Nakamichi, Niro, 3,849,799.

Nakamura, Hiroshi: *See—*
Igarashi, Isemi; Nakamura, Hiroshi; and Sugiyama, Susumu, 3,848,329.

Nakamura, Keiji: *See—*
Iwasa, Junzo; Maruto, Shunsuke; Ikeda, Noboru; Nakamura, Keiji; and Shoji, Yukinobu, 3,849,561.

Nakamura, Kyosuke: *See—*
Miyamaoto, Nobuyuki; Nakamura, Kyosuke; and Nittani, Osamu, 3,849,268.

Nakamura, Sumio, to Olympus Optical Co., Ltd. Large-aperture telephoto lens. 3,848,972, Cl. 350-223.000.

Nakamura, Toshio; Maeda, Tadao; Takenaka, Hiroshi; and Yamahira, Yoshiya, to Sumitomo Chemical Co., Ltd. Pharmaceutical compositions having controlled gastro-intestinal absorption. 3,849,558, Cl. 424-234.000.

Nakane, Keiichi: *See—*
Endou, Hirohide; Kawasaki, Jun; Fujimoto, Yoshiji; Nakane, Keiichi; and Kitazume, Yoshiaki, 3,849,760.

Nakanishi, Michio; Araki, Kazuhiko; Tahara, Tetsuya; and Shiroki, Masami, to Yoshitomi Pharmaceutical Industries, Ltd. Thieno-[2,3-e][1,4]diazepin-2-ones. 3,849,405, Cl. 260-239.30b.

Nakanishi, Michio; Oe, Takanori; and Tashiro, Chiaki, to Yoshitomi Pharmaceutical Industries, Ltd. Piperazine derivatives. 3,849,410, Cl. 260-240.0tc.

Nakano, Takaaki: *See—*
Hongo, Eitaro; Yamada, Hirohiko; Fujii, Yozo; Masuda, Katsumi; Itou, Junichi; and Nakano, Takaaki, 3,849,452.

Nakano, Zenichi: *See—*
Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, 3,849,590.

Nakashima, Yoichi; Sakamoto, Hisashi; Ishizuka, Takeshi; and Suzuki, Kensuke, to Hitachi, Ltd. High break down voltage-combined semiconductor device suitable for fabrication of voltage multiplier rectifier circuit. 3,849,791, Cl. 357-72.000.

Nakashita, Mitsuo: *See—*
Nakagome, Takenari; Agui, Hideo; Mitani, Toru; and Nakashita, Mitsuo, 3,849,421.

Nakatsuji, Yasukuni; Kanai, Tamaki; Noda, Hiroshi; Miura, Sadayoshi; and Suzuki, Hideaki, to Teijin Limited. Polyesters from 2,6-naphthalenedicarboxylic acid and tris(2-hydroxyethyl) isocyanurate. 3,849,382, Cl. 260-75.00n.

Nakayama, Hirokazu: *See—*
Inamoto, Inamoto; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kimura, Yoshitomo, 3,849,473.

Nakayama, Kazufumi: *See—*
Takagi, Mikio; Nakayama, Kazufumi; Terada, Chiaki; and Kamioka, Hajime, 3,849,270.

Nakayama, Kiyoshi; and Yoshida, Hajime, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for producing L-arginine by fermentation. 3,849,250, Cl. 195-29.000.

Nakayama, Kiyoshi; and Hagino, Hiroshi, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-tryptophan. 3,849,251, Cl. 195-29.000.

Namba, Akio: *See—*
Yonekura, Saku; Miyamoto, Hideaki; and Namba, Akio, 3,848,998.

Namekawa, Toshihiko: *See—*
Kasahara, Masao; Namekawa, Toshihiko; Fujiwra, Keniti; Hirasawa, Shigeiti; and Sugiyama, Yasuo, 3,849,761.

Nanba, Yasuhiro; and Matsuda, Motonobu, to Minolta Camera Kabushiki Kaisha. Light integrating type light detector circuit with photovoltaic cell. 3,849,786, Cl. 354-51.000.

Nasu, Rikuo: *See—*

Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.

National Appliance Company: *See—*
Folsom, Max H., 3,848,569.

National Cash Register Company, The: *See—*
Schwab, Helmut; and Hoover, Troy Eugene, 3,849,164.

National Ceiling Corporation: *See—*
Thompson, Neil J., 3,848,385.

National Foam System, Inc.: *See—*
Chiesa, Peter Jordan, Jr., 3,849,315.

National Mine Service Company: *See—*
LeBegue, Maurice K., 3,848,930.

National Patent Development Corporation: *See—*
Shepherd, Thomas H.; and Gould, Francis E., 3,849,185.

National Research Development Corporation: *See—*
Binns, Kenneth John, 3,849,682.

NDM Corporation: *See—*
Patrick, Charles T., Jr.; and Milligan, Charles L., 3,848,600.
Patrick, Charles T., Jr., 3,849,366.

Nebzydoski, John W., to Texaco Inc. Di and tri (hydrocarbylammonium) trithiocyanurate and lubricating oil compositions containing same. 3,849,319, Cl. 242-33.600.

Neiderer, Thomas O.: *See—*
Niederer, Otto C., 3,848,730.

Neihage, Helmut: *See—*
Forster, Johannes; Bezold, Karl-Heinz; and Neihage, Helmut, 3,849,718.

Neiley, Geoffrey C., Jr.: *See—*
Fuller, George A., Jr.; Langevin, Wilfred L.; Lutts, Carlton G.; and Neiley, Geoffrey C., Jr., 3,848,866.

Nelson, Eric L.: *See—*
Dea, Frank J.; and Nelson, Eric L., 3,849,553.

Nelson, John Russell, to Coulter Electronics Inc., mesne. Slide mounting apparatus for microscopy. 3,848,962, Cl. 350-86.000.

Nelson Research & Development Company: *See—*
Dea, Frank J.; and Nelson, Eric L., 3,849,553.

Nelson, Richard E.: *See—*
Baumbach, Bertram W.; and Nelson, Richard E., 3,849,750.

Nettles, Robert G., to Johnson Service Company, mesne. Signal comparator circuit for analog control systems. 3,849,674, Cl. 307-253.000.

Neuhausser KG: *See—*
Geisler, Roland; and Konic, Wilhelm, 3,848,810.

Neuman, Eli: *See—*
Otsap, Ben Amy; and Neuman, Eli, 3,848,585.

Neuss, Norbert: *See—*
Delong, Donald C.; Lively, David H.; and Neuss, Norbert, 3,849,419.

New England Nuclear Corporation: *See—*
Adler, Norman; Morgenthau, John L., Jr.; and Gold, Paul A., 3,848,773.

Newman, Wilfred Harry, to Ozalid Company Limited. Pressure-sensitive transfer elements. 3,849,239, Cl. 161-160.000.

Niccum, Forest G.; and Heinrich, Peter, Jr., to Marvel Engineering Company. Filter media inserts. 3,849,314, Cl. 210-493.000.

Nichols, Robert A., to Capital Enterprises, Inc. Heater attachment device for a wall-mounted thermostat. 3,849,753, Cl. 337-102.000.

Nidy, Eldon George: *See—*
Kornis, Gabriel; Steinhards, Arnolds; Nidy, Eldon George; and Vostral, Henry J., 3,849,106.

Niederer, Dennis A.: *See—*
Niederer, Otto C., 3,848,730.

Niederer, Otto C.; deceased (by Neiderer, Thomas O.; and Niederer, Dennis A.; executors). Egg washer. 3,848,730, Cl. 198-183.000.

Nield, Erich, to Imperial Chemical Industries Limited. Process for preparing a polymer comprising acrylonitrile, an aromatic olefin and a terpene. 3,849,384, Cl. 260-80.780.

Nihira, Shohachi, to Citizen Watch Company Limited. Printer with rotary roll column selecting means. 3,848,527, Cl. 101-93.00c.

Nihon Denshi Kabushiki Kaisha: *See—*
Koike, Hirotami; and Ueno, Katsuyoshi, 3,849,647.

Nikolaev, Anatoly Mikhailovich: *See—*
Chukhanov, Zinovy Zinovievich; Chukhanov, Zinovy Fedorovich; Panov, Vladimir Illarionovich; Nikolaev, Anatoly Mikhailovich; Tsuprov, Sergei Andreevich; and Lyashenko, Ivan Vasilievich, 3,848,536.

Nilsson, Bruno Yngve, to Boliden Aktiebolag. Method and apparatus for digitally determining the complex electric field when carrying out prospecting operations. 3,849,722, Cl. 324-9.000.

Nilsson, Erik Henning: *See—*
Borg, Sven Christer; Hesson, Christer Ragnar; and Nilsson, Erik Henning, 3,848,753.

Nippon Chemical Industrial Co., Ltd.: *See—*
Imamura, Kennosuke; Nabekawa, Shukichi; and Takada, Masao, 3,849,439.

Nippon Electric Company: *See—*
Ishiguro, Tatsuo, 3,849,595.

Nippon Electric Company, Limited: *See—*
Furuya, Tadashi, 3,849,744.
Miyazaki, Togo, 3,849,686.
Shirato, Hajime, 3,849,767.

Nippon Kokan Kabushiki Kaisha: *See—*
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,849,277.

Nippon Steel Corporation: *See—*
Asano, Hidejiro; and Ouyagi, Yashichi, 3,849,176.
Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, 3,849,209.

Nippon Zeon Co., Ltd.: *See—*
Sato, Ryozi; and Chino, Yasuyoshi, 3,849,498.

Nippon Zeon Company, Ltd.: *See—*
Yamaguchi, Kaoru; and Saito, Takashi, 3,849,355.

Nippondenso Co., Ltd.: *See—*
Konishi, Masami; and Hikita, Kenji, 3,849,093.

Nischk, Gunther: *See—*
Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, 3,849,376.

Nishikawa, Masao: *See—*
Morimoto, Hiroshi; Watanabe, Masazumi; Imada, Isuke; and Nishikawa, Masao, 3,849,453.

Nishino, Tokiharu: *See—*
Shimano, Keizo; and Nishino, Tokiharu, 3,848,784.

Nishiyama, Akio: *See—*
Koda, Minoru; Shioyama, Tadao; and Nishiyama, Akio, 3,849,795.

Nishiyama, Ryuzo: *See—*
Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.

Nissan Motor Company, Limited: *See—*
Hosaka, Akio; Baba, Kosaku; and Wazawa, Kiyoshi, 3,849,759.
Ito, Naganori; and Aikawa, Hiroshi, 3,848,862.
Kinoshita, Keijiro, 3,848,410.
Matsui, Masashi; and Horio, Teisuke, 3,848,694.
Takahashi, Koichi; Usui, Keizaburo; Aba, Eiichi; and Ozaki, Kiyotaka, 3,848,431.

Nittani, Osamu: *See—*
Miyamaoto, Nobuyuki; Nakamura, Kyosuke; and Nittani, Osamu, 3,849,268.

Nitto Boseki Co., Ltd.: *See—*
Tabei, Kiyoshi; and Kittaka, Hirokazu, 3,848,406.

Nitzsche, Siegfried; Marwitz, Heinrich; and Hockemeyer, Friedrich, to Wacker-Chemie GmbH. Agents for the manufacture of organopolysiloxane coatings with repel adhesive substances. 3,849,359, Cl. 260-32.60r.

Nockemann, Ernst: *See—*
Wilfert, Karl; Gmeiner, Gunter; Grabner, Christian; and Nockemann, Ernst, 3,848,910.

Noda, Hiroshi: *See—*
Nakatsuji, Yasukuni; Kanai, Tamaki; Noda, Hiroshi; Miura, Sadayoshi; and Suzuki, Hideaki, 3,849,382.

Noda, Nobuhiro: *See—*
Miyakawa, Seinan; and Noda, Nobuhiro, 3,848,986.

Noelting, C. Bernard: *See—*
Allen, James E.; Lashley, James C.; and Noelting, C. Bernard, 3,848,280.

Noguchi, Takeshi, to Sumitomo Electric Industries, Ltd. Friction pad for disc brake assembly. 3,848,708, Cl. 188-73.100.

Noiles, Douglas G., to United States Surgical Corporation. Artificial hip joint. 3,848,272, Cl. 3-1.000.

Noiles, Douglas G., to United States Surgical Corporation. Fluid control system for controlling intravenous flow rate. 3,848,634, Cl. 137-601.000.

Norddeutsche Affinerie: *See—*
Schulze, Reinhold, 3,849,180.

Nordeen, Erwin E.; and Olson, Clifford H., Jr., to Whirlpool Corporation. Adjustable wheel mounting means. 3,848,292, Cl. 15-339.000.

Norfin, Inc.: *See—*
Johnson, Dale R., 3,848,867.

Norgard, Edward J.: *See—*
Aanestad, Robert D.; Straub, Melvin J.; and Norgard, Edward J., 3,848,772.

Norgren, C. A., Co.: *See—*
Smith, Leslie William; Wates, Michael John; and Tait, Robert John, 3,848,626.

Norman, Telfer E. Smelting of copper-iron or nickel-iron sulfides. 3,849,120, Cl. 75-74.000.

Norton Company: *See—*
Villani, Gerard J., 3,849,124.

Novak, Warren D., to Mosler Safe Company, The. Cassette type sequence camera. 3,848,987, Cl. 354-212.000.

Nunnally, Kenneth R.: *See—*
Turley, Robert R.; Castor, William M.; and Nunnally, Kenneth R., 3,849,339.

Nuprin Corporation: *See—*
Hondzinski, Leonard J., 3,848,538.
Hondzinski, Leonard J., 3,848,539.
Hondzinski, Leonard J., 3,848,540.
Hondzinski, Leonard J., 3,848,541.

Nuss, Christopher, to Chrysler Corporation. Pulley method of manufacture. 3,848,309, Cl. 29-159.00r.

Nutron Corporation: *See—*
Denker, James M., 3,848,481.

N.V. Technische Maatschappij Bergmann: *See—*

Condolios, Elie; and Van Essen, Uilke, 3,849,310.

O'Brien, Billy L.; and O'Brien, Heber P. Riser section apparatus. 3,848,421, Cl. 61-72.300.

O'Brien, Heber P.: *See—*
O'Brien, Billy L.; and O'Brien, Heber P., 3,848,421.

Ochiai, Takeshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Skid control system for vehicles. 3,848,933, Cl. 303-21.0be.

O'Connell, Thomas B.: *See—*
Maltby, Robert E., Jr.; and O'Connell, Thomas B., 3,849,099.

O'Connor, Alton J.: *See—*
Charboneau, Benny J.; and O'Connor, Alton J., 3,849,031.

Oe, Takanori: *See—*
Nakanishi, Michio; Oe, Takanori; and Tashiro, Chiaki, 3,849,410.

Office National d'Etudes et de Recherches (O.N.E.R.A.): *See—*
Girard, Andre; and Laurent, Jean, 3,849,005.

Ogata, Fumimaro: *See—*
Ando, Satoshi; Matsui, Masao; and Ogata, Fumimaro, 3,849,044.

Ogawa, Toshio: *See—*
Suzuki, Takaji; and Ogawa, Toshio, 3,848,586.

Ogihara, Masuo; and Watanabe, Masanori, to Seiko Koki Kabushiki Kaisha. Shutter assembly for a camera. 3,849,788, Cl. 354-226.000.

Oguro, Tomokatsu, to Hitachi, Ltd. Magnetron with choke structure for reducing harmonics in output. 3,849,737, Cl. 331-86.000.

O'Hara, Mark J.: *See—*
Gleim, William K. T.; and O'Hara, Mark J., 3,849,287.

Ohashi, Shozo; Mori, Mitsuo; and Oyobe, Satoshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusha. Means for preventing inversion of movable bottom of silver collection can. 3,848,297, Cl. 19-159.00r.

Ohbayashi-Gumi, Ltd.: *See—*
Takase, Kunio; Miyakoshi, Hisashi; and Ohmura, Mitsuo, 3,848,418.

Ohkawa, Shunjiro; and Minagawa, Katsumo, to Bridgestone Tire Company Limited. Extrusion die device. 3,849,045, Cl. 425-131.100.

Ohlson, John L.: *See—*
Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., 3,849,169.

Ohmura, Mitsuo: *See—*
Takase, Kunio; Miyakoshi, Hisashi; and Ohmura, Mitsuo, 3,848,418.

Ohnesorge, Ralph R., to Gresen Manufacturing Company. Orbital device. 3,849,034, Cl. 418-61.00b.

Ohshima, Syunji, to Sony Corporation. Sterephonic signal reproducing apparatus. 3,849,600, Cl. 179-1.00g.

Oka, Michio: *See—*
Arakawa, Tetsutaro; and Oka, Michio, 3,849,087.

Okamoto, Takehiko: *See—*
Inoue, Masakazu; Okamoto, Takehiko; and Nagai, Ikuo, 3,849,358.

O'Keeffe, Terence W., to Westinghouse Electric Corporation. Alignment of a patterned electron beam with a member by electron backscatter. 3,849,659, Cl. 250-492.000.

Okubo, Hideyo: *See—*
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,849,277.

Olin Corporation: *See—*
Boudakian, Max M., 3,849,429.

Olin Mathieson Chemical Corporation: *See—*
Snyder, Amandus D.; and Taft, William K., 3,849,081.

Oliver, Janet. Inflatable bed pan. 3,848,274, Cl. 4-113.000.

Olivetti, Ing. C., & C., S.p.A.: *See—*
Ceccarelli, Pietro, 3,848,748.
Saltini, Fabrizio; and Eccettuato, Vittorio, 3,849,634.

Ollivier, Fred; and Ollivier, Gerald, to Pepro, Societe pour le Developpement et la Vente de Specialities Chemeques. Process for the transformation of the interior structure of clouds. 3,848,801, Cl. 239-2.00r.

Ollivier, Gerald: *See—*
Ollivier, Fred; and Ollivier, Gerald, 3,848,801.

Olsen, Ray, to Superior Outdoor Display Inc. Illuminated outdoor sign. 3,848,349, Cl. 40-132.00r.

Olson, Clifford H., Jr.: *See—*
Nordeen, Erwin E.; and Olson, Clifford H., Jr., 3,848,292.

Olson, Robert E.: *See—*
Egger, Carl T.; and Olson, Robert E., 3,849,391.

Olympus Optical Co., Ltd.: *See—*
Nakamura, Sumio, 3,848,972.

Omichi, Takenori; Ikeda, Teppei; and Adachihara, Shunichi, to Fuji Photo Film Co., Ltd. Method for providing subbing layer of photographic film. 3,849,166, Cl. 117-47.00a.

Omietanski, George M.; and Petty, Herbert E., to Union Carbide Corporation. Process for reacting weak acids with chloroalkyl substituted silicon compounds. 3,849,471, Cl. 260-448.20c.

Omiya, Shoji; Hayashi, Yoshiaki; and Kuki, Akio, to Matsushita Electric Industrial Co., Ltd. Rotary head magnetic recording and reproducing apparatus. 3,849,796, Cl. 360-85.000.

One-half to Buell, Eugene F.: *See—*
Irani, Meherwan C., 3,849,535.

O'Neal, John L. Apparatus for transporting flat glass and the like. 3,848,917, Cl. 296-3.000.

O'Neill, Edwin R. Safety device for protecting an operator's hands. 3,848,502, Cl. 83-814.000.

Ono, Yoshio, to Pioneer Electronic Corporation. Cartridge adapter. 3,849,798, Cl. 360-94.000.

Opti-Holding AG: *See—*
Frohlich, Alfons, 3,848,298.

Optical Data Systems, Inc.: *See—*
Crowther, Ted J.; Jacobson, Charles F.; and Sutherlin, Kent K., 3,849,766.

Oral Corporation: *See—*
Ruckstuhl, Raymond Charles, 3,849,260.

O'Rear, Jacques G.; and Griffith, James R., to United States of America, Navy. Bis(trifluoromethyl)epoxides. 3,849,450, Cl. 260-348.00r.

Orriss, William T., to I-T-E Circuit Breaker (Canada) Limited. Small circuit breaker having large contact separation. 3,849,748, Cl. 335-174.000.

Ort, Eldon L., to United States of America, Navy. Radar system. 3,849,781, Cl. 343-18.00e.

Ortel, Gerhard, to Kuper, Heinrich. Method for transversely assembling sheet strips such as veneers, strips of cardboard or the like. 3,849,222, Cl. 156-148.000.

Orton, Geoffrey Keith: *See—*
Smythe, George Edward; and Orton, Geoffrey Keith, 3,848,591.

Osaka Gas Co., Ltd.: *See—*
Takase, Kunio; Miyakoshi, Hisashi; and Ohmura, Mitsuo, 3,848,418.

Oseroff, Herbert B.; and Sparks, William J. Hand grips. 3,848,480, Cl. 74-558.500.

Oshima, Teruo; Nagase, Tsuneyuki; Masuko, Fujio; Wada, Takeshi; Hirooka, Masaaki; and Taniguchi, Isoji, to Sumitomo Chemical Company, Ltd. Curable olefin copolymers and process for producing the same. 3,849,385, Cl. 260-80.780.

Ostreicher, Robert: *See—*
Walz, Alfred; and Ostreicher, Robert, 3,849,717.

Ota, Minoru: *See—*
Fujimoto, Yoshiji; Hananoi, Toshihiro; Yasuda, Michio; Makihara, Hiroshi; Kuramizu, Masaru; Ota, Minoru; Kokido, Hiroshi; and Kadota, Shozo, 3,849,762.

Otis Engineering Corporation: *See—*
Sizer, Phillip S.; and Young, Carter R., 3,848,668.

Otsap, Ben Amy, to Meeda Scientific Instrumentation Limited. Integrated flow indicator. 3,848,584, Cl. 128-2.080.

Otsap, Ben Amy; and Neuman, Eli, to Meeda Scientific Instrumentation Limited. Peak flow indicator for fluids. 3,848,585, Cl. 128-2.080.

Otsu, Ikoo: *See—*
Kikuchi, Makoto; Asano, Kiroaki; Otsu, Ikoo; and Saeki, Toyoaki, 3,848,362.

Otsuki, Tesuo: *See—*
Iwano, Haruhiko; Tanaka, Mitsugu; Otsuki, Tesuo; and Arai, Atsuaki, 3,849,133.

Otubo, Osamu; Terashima, Isamu; and Akutsu, Norio, to Hitachi, Ltd. Electrophotographic color copying apparatus. 3,848,990, Cl. 355-4.000.

Ousby, John Clark; and Turner, William Brian, to Imperial Chemical Industries Limited. Nitrogen-containing compounds. 3,849,437, Cl. 260-325.000.

Ouyagi, Yashichi: *See—*
Asano, Hidejiro; and Ouyagi, Yashichi, 3,849,176.

Overgoor, Bernardus Josephus Marie: *See—*
Gerardus, Henricus Wijnandus; and Overgoor, Bernardus Josephus Marie, 3,849,735.

Overhead Door Corporation: *See—*
Youngs, Wilbur R., 3,848,653.

Owatonna Tool Company: *See—*
Anderson, Richard T.; and Setheny, Michael J., 3,848,749.

Owen, Harold W., to Pullman Incorporated. Welding jig. 3,848,863, Cl. 269-9.000.

Owen, Hartley, to Mobil Oil Corporation. High temperature catalytic cracking with low coke producing crystalline zeolite catalysts. 3,849,291, Cl. 208-78.000.

Owens-Illinois, Inc.: *See—*
Cooley, Richard F., 3,849,739.

Oy Wartsila AB: *See—*
Mertanen, Pekka Henrikki, 3,848,442.

Oyobe, Satoshi: *See—*
Ohashi, Shozo; Mori, Mitsuo; and Oyobe, Satoshi, 3,848,297.

Ozaki, Kiyotaka: *See—*
Takahashi, Koichi; Usui, Keizaburo; Aba, Eiichi; and Ozaki, Kiyotaka, 3,848,431.

Ozalid Company Limited: *See—*
Newman, Wilfred Harry, 3,849,239.

Ozawa, Jun; Isogai, Tokio; Ishikawa, Toshio; Yamagiwa, Tokio; Matsumura, Mutsuo; Nakano, Zenichi; and Fuziya, Shigeru, to Hitachi, Ltd. Gas filled electrical bushing with concentric intermediate electrodes. 3,849,590, Cl. 174-31.00r.

Packard Instrument Company Inc.: *See—*
Kaartinen, Niilo H., 3,849,069.

Page, Kenneth J.; and Van Buren, John. Velocity-actuated fuel control valve. 3,848,858, Cl. 261-63.000.

Page, Littleton D. Apparatus for maintaining the water level within a swimming pool to predetermined limits. 3,848,627, Cl. 137-392.000.

Pagliari, Alberto: *See—*
Seberini, Febo; Valvassori, Alberto; Tavazzani, Carlo; and Pagliari, Alberto, 3,849,518.

Pakhtusova, Tamara Timofeevna: *See—*
Tesner, Pavel Alexandrovich; Knorre, Vadim Georgievich; Podkopaev, Vladimir Fedorovich; Pakhtusova, Tamara Timofeevna; Baenkevich, Vsevolod Viktorovich; and Astakhov, Arkady Petrovich, 3,849,073.

Paladino, Dick. Oboe fingering system and mouthpiece. 3,848,503, Cl. 84-380.000.

Palatucci, Gerald J.: *See—*
Shames, Oscar; Hinds, James L.; Palatucci, Gerald J.; and Raditz, Michael, 3,849,777.

Palm, Bert E.; and Kennedy, Alexander W., to Diamond Shamrock Corporation. Pulverulent metal coating compositions. 3,849,141, Cl. 106-1.000.

Palm, Lewis J.; and Palm, Ronald B., to Fulton Boiler Works, Inc. Thermal fluid heater apparatus. 3,848,661, Cl. 165-1.000.

Palm, Ronald B.: *See—*
Palm, Lewis J.; and Palm, Ronald B., 3,848,661.

Palmer, Leon B.; and Conger, Robert P., to Congoleum Industries, Inc. Carpet embossing in register with print. 3,849,157, Cl. 117-11.000.

Palmer, Leon B.; and Conger, Robert P., to Congoleum Industries, Inc. Carpet embossing in register with print. 3,849,158, Cl. 117-11.000.

Palmer, Leon B.; and Conger, Robert P., to Congoleum Industries, Inc. Carpet embossing in register with print. 3,849,159, Cl. 117-11.000.

Panissidi, Hugo A.: *See—*
Gardineer, Bayard G.; and Panissidi, Hugo A., 3,848,515.

Pankow, Horst, to Gewerkschaft Schalker Eisenhuette. Gas burner for coke oven exhaust gas. 3,849,058, Cl. 431-264.000.

Panov, Vladimir Illarionovich: *See—*
Chukhanov, Zinovy Zinovievich; Chukhanov, Zinovy Fedorovich; Panov, Vladimir Illarionovich; Nikolaev, Anatoly Mikhailovich; Tsuprov, Sergei Andreevich; and Lyashenko, Ivan Vasilievich, 3,848,536.

Papa, Anthony Joseph; and Proops, William Robert, to Union Carbide Corporation. Polycarbamates of organic polyisocyanates. 3,849,445, Cl. 260-340.900.

Pappas, John A.: *See—*
Cosco, Robert J.; and Pappas, John A., 3,849,690.

Paquet, Eugene H.: *See—*
Lancaster, Paul M.; and Paquet, Eugene H., 3,848,497.

Parfenov, Viktor Nikolaevich: *See—*
Malievsky, Alexandr Dmitrievich; Vints, Viktor Vladimirovich; Emanuel, Nikolai Markovich; and Parfenov, Viktor Nikolaevich, 3,849,499.

Parfums Rochas, Inc.: *See—*
Davidson, Bruce R.; and Agneta, Agustus R., 3,848,459.

Paris, Philippe Y. J.; Bougon, Pierre P. A.; and Guimard, Lucien, to International Standard Electric Corporation. Simulator visualization device. 3,849,597, Cl. 178-6.800.

Park, Robert H., to Fast Load Control, Inc. Method for employment of fast turbine valving. 3,849,666, Cl. 307-85.000.

Parker, Charles K., Jr.: *See—*
Miner, William R.; and Parker, Charles K., Jr., 3,849,318.

Parker, Winfred E.: *See—*
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,849,321.
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,849,454.

Parker-Hannifin Corporation: *See—*
Hoffman, Robert K., 3,848,900.
Hoffman, Robert K., 3,848,901.

Parlato, Philip J., to Alarm Products International, Inc. Connector for alarm system door cord. 3,848,959, Cl. 339-200.000.

Parr, Eric W., to Wilkinson Sword Limited. Spirometers. 3,848,583, Cl. 128-2.080.

Partida, Pedro. Confining nozzle for spray gun. 3,848,807, Cl. 239-290.000.

Pas, John: *See—*
Way, Merton B.; and Pas, John, 3,848,853.

Pasta, Mario: *See—*
Soardo, Paolo; and Pasta, Mario, 3,849,000.

Patel, Nagar J., to Westinghouse Electric Corporation. Circuit breaker with reverse override device. 3,849,619, Cl. 200-153.0sc.

Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich. Plasma arc torch. 3,849,584, Cl. 13-9.000.

Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Kumysh, Ilya Iosifovich; Tsykulenko, Anatoly Konstantinovich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Bondarenko, Oleg Petrovich; and Bogachenko, Alexei Georgievich. Method of electrosag melting of metal ingots. 3,849,588, Cl. 13-34.000.

Patrick, Charles T., Jr.; and Milligan, Charles L., to NDM Corporation. Indifferent electrode in electrosurgical procedures and method of use. 3,848,600, Cl. 128-303.130.

Patrick, Charles T., Jr., to NDM Corporation. Epoxy resin compositions and processes for preparing same. 3,849,366, Cl. 260-37.0ep.

Patten, Thomas, to Picker Corporation. Automatic X-ray inspection system. 3,849,650, Cl. 250-321.000.

Patterson, James M. Dual trailer hitch attachment. 3,848,893, Cl. 280-417.000.

Pattison, Victor A., to Hooker Chemical Corporation. Resins containing pyridine N-oxide salts of carbamoyl halides. 3,849,425, Cl. 260-295.0ca.

Pattison, Victor A., to Hooker Chemical Corporation. Certain pyridinium carbamoyl compositions. 3,849,426, Cl. 260-295.0ca.

Pattison, Victor A., to Hooker Chemical Corporation. Certain pyridinium anilide halide compositions. 3,849,427, Cl. 260-295.00q.

Pattison, Victor A., to Hooker Chemical Corporation. Certain pyridinium carbamoyloxy compositions. 3,849,428, Cl. 260-295.0ca.

Pavlich, Joseph P.: *See—*
Motley, Herman R.; Morris, Earl F.; and Pavlich, Joseph P., 3,849,316.

Pavlik, Norman M.; and Cunningham, James W., to Westinghouse Electric Corporation. Method of producing molded stators from steel particles. 3,848,331, Cl. 29-596.000.

Paxon Machine Company: *See—*
Buta, John R., 3,848,788.

Payne, Betty Lou B.: *See—*
Payne, Linwood K., Jr., deceased, 3,849,478.

Payne, John C., 1/2 to Payne, Leslie J. Free-fall corner. 3,848,682, Cl. 175-5.000.

Payne, Leslie J.: *See—*
Payne, John C., 3,848,682.

Payne, Linwood K., Jr., deceased (by Payne, Betty Lou B.; executrix), to Union Carbide Corporation. Tetrahydro-1-naphthyl-N-methylcarbamates. 3,849,478, Cl. 260-479.00c.

P.D.Q. Plastics, Inc.: *See—*
Lawlor, James J., 3,848,546.

Pearl, David Raymond: *See—*
Gerber, Heinz Joseph; and Pearl, David Raymond, 3,848,327.

Pearson, Monry L.; and Walls, Lee C., to Raceway Products Corporation. Hopple. 3,848,571, Cl. 119-126.000.

Peck, C. S., Co., Inc.: *See—*
Peck, Clifford S.; and Garrison, Clarence A., 3,849,057.

Peck, Clifford S.; and Garrison, Clarence A., to Peck, C. S., Co., Inc. Jet flame cleaning and coating apparatus and method. 3,849,057, Cl. 431-158.000.

Peck, Theodore H., to Bausch & Lomb Incorporated. Microscope stage fingers. 3,848,963, Cl. 350-90.000.

Peebles, Roy M. Method for polishing a seaming roll. 3,848,372, Cl. 51-289.00r.

Penick & Ford, Limited: *See—*
Harvey, Richard D.; and Ladenburg, Kurt, 3,849,253.

Pennau, Karl L., to Kimberly-Clark Corporation. Fastening tape arrangement for disposable diapers. 3,848,596, Cl. 128-284.000.

Penny, William H.: *See—*
Harautuneian, Andrew; and Penny, William H., 3,848,605.

Pentapharm A.G.: *See—*
Percs, Edmund E.; Stocker, Kurt F.; Blomback, Birger; Blomback, Margareta; and Hessel, Birgit, 3,849,252.

Pepro, Societe pour le Developpement et la Vente de Specialities Chemeques: *See—*
Ollivier, Fred; and Ollivier, Gerald, 3,848,801.

Perche, Maurice, to ITT Industries, Inc. Booster for central heating installation with automatic regulation. 3,848,800, Cl. 237-8.00a.

Percs, Edmund E.; Stocker, Kurt F.; Blomback, Birger; Blomback, Margareta; and Hessel, Birgit, to Pentapharm A.G. Enzyme composition and process for the manufacture thereof. 3,849,252, Cl. 195-62.000.

Perfect Pump Co.: *See—*
Mulvey, Philip A.; and Porter, Kenneth G., 3,849,032.

Perger, Julius M., to General Motors Corporation. Method of forming stiffener ribs in a sheet metal panel. 3,848,323, Cl. 29-475.000.

Perger, Julius M., to General Motors Corporation. Method of forming a sheet metal door. 3,848,324, Cl. 29-475.000.

Perkins, William C.: *See—*
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Permutit Company, Inc., The: *See—*
Anderson, John R., 3,849,306.

Perrotti, Emilio: *See—*
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Perry, Edward James; and Moumouloff, Paul, to Kins Developments Limited. Heating/cooling apparatus. 3,848,664, Cl. 165-22.000.

Persson, Jan Edward, to Atlas Copco Aktiebolag. Method and means for drilling. 3,848,683, Cl. 175-65.000.

Pervel Industries, Inc.: *See—*
Bourdon, Richard P., 3,849,236.

Pervitsky, Boris Antonovich: *See—*
Kazakov, Nikolai Efimovich; Shipitsin, Svyatoslav Sergeevich; Minchenko, Veniamin Alexandrovich; Kudryavtsev, Innokenty Mikhailovich; Zimin, Vladimir Afanasievich; and Pervitsky, Boris Antonovich, 3,849,046.

Peter, Lothar: *See—*
Peter, Oskar E.; and Peter, Lothar, 3,849,015.

Peter, Oskar E.: *See—*
Peter, Oskar E.; and Peter, Lothar, 3,849,015.

Peter, Oskar E.; and Peter, Lothar, to Peter, Oskar E. Symmetrical hub-to-shaft connection. 3,849,015, Cl. 403-370.000.

Peter, Rene; and Lambrich, Hans Peter, to RCA Corporation. Vertical convergence circuits. 3,849,696, Cl. 315-13.00c.

Petersen, George E.: *See—*
Halloway, James H.; and Petersen, George E., 3,849,196.

Peterson, Bertil G., to Tobin-Arp Manufacturing Company. Closed loop air filtration system. 3,849,091, Cl. 55-302.000.

Peterson, Robert S.; and Cook, John W., to Westinghouse Electric Corporation. Automatic control method and apparatus for a rolling mill. 3,848,443, Cl. 72-8.000.

Petrillo, Vincenzo: *See—*
Corradi, Bruno; Petrillo, Vincenzo; and Cimarosti, Giordano, 3,849,266.

Petro-Tex Chemical Corporation: *See—*
Bowman, William G., 3,849,512.
Manning, Harold E., 3,849,511.

Petro-Tex Chemicals Corporation: *See—*

Miklas, Edward J., 3,849,545.
Petroshanoff, George J., to Tridair Industries. Device for inserting and clamping a printed circuit board. 3,848,953, Cl. 339-92.00m.
Petty, Herbert E.: *See—*
Omietanski, George M.; and Petty, Herbert E., 3,849,471.
Pezot, Jacques, to Commissariat a l'Energie Atomique. Pulse generator for delivering rectangular pulses having fast rise and fall times. 3,849,732, Cl. 328-59.000.
Pfeifer, Jerome L., to Bendix Corporation, The. System for making binary acoustic holograms. 3,849,758, Cl. 340-5.00h.
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc. Xanthone carboxylic acid compounds for inhibiting asthma. 3,849,565, Cl. 424-283.000.
Pfizer Inc.: *See—*
Conover, Lloyd H.; and Woodward, Robert B., 3,849,493.
Pflanz, Herbert M., to Allis-Chalmers Corporation. Construction type vacuum interrupter. 3,849,617, Cl. 200-144.00b.
Philipps Petroleum Company: *See—*
Louthan, Rector P., 3,849,443.
Phillips Fibers Corporation: *See—*
Womer, Walter D., 3,848,829.
Phillips, James L. Baffle means for heat exchanger, and method of fabrication thereof. 3,848,573, Cl. 122-149.000.
Phillips Petroleum Company: *See—*
Clampitt, Richard L.; and Hessert, James E., 3,848,673.
Doss, Richard C.; and Gingerich, Leo L., 3,849,381.
Pryor, Rboert C.; and Katz, Howard M., 3,848,549.
Reed, Jerry O.; and Dix, James S., 3,849,352.
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Zuech, Ernest A., 3,849,507.
Phillips, Sam B., Jr. Parachute assembly. 3,848,834, Cl. 244-145.000.
Philofsky, Elliott M.: *See—*
Hall, Edward L.; and Philofsky, Elliott M., 3,848,330.
Philpotts, Andrew, to Foseco International Limited. Treatment of slags covering molten metals. 3,849,117, Cl. 75-24.000.
Physician's Medical Patent Development Corporation: *See—*
Sackner, Marvin A., 3,848,604.
Piaard-Legry, Gerard: *See—*
Montuelle, Jean; Chaudron, Georges; and Piaard-Legry, Gerard, 3,849,079.
Piazza, Richard Elliot; and Janko, Bozidar, to Tektronix, Inc. Distributed deflection structure employing dielectric support. 3,849,695, Cl. 315-3.000.
Pickard, Robert G.: *See—*
Jackson, Geoffrey N.; Pickard, Robert G.; Brackley, Graham; and Satchell, David W., 3,849,283.
Picker Corporation: *See—*
Patten, Thomas, 3,849,650.
Piech, Kenneth Robert; and Walker, John Elwyn, to Calspan Corporation. Method for extracting photometric information from aerial photographic imagery. 3,849,006, Cl. 356-209.000.
Pilkington Brothers Limited: *See—*
Branch, Geoffrey Hindle; and Hall, James Edward, 3,848,752.
Piltzecker, John William: *See—*
Brandt, Roger; and Piltzecker, John William, 3,849,286.
Pim, Norman L., to Gulf & Western Manufacturing Company (Hastings). Cycloid press. 3,848,472, Cl. 74-52.000.
Pioneer Electronic Corporation: *See—*
Ono, Yoshio, 3,849,798.
Pisanchyn, John: *See—*
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Pitha, John J., to General Electric Company. Cordierite binder composition. 3,849,145, Cl. 106-39.600.
Pitkethly, Robert Chalmers: *See—*
Bourne, Kenneth Hugh; Davies, Evan Ellis; and Pitkethly, Robert Chalmers, 3,849,299.
Pitner, Alfred, 1/2 to Malnaison, Nadella Ruid. Radial rolling bearing assembly. 3,848,939, Cl. 308-236.000.
Pitney-Bowes, Inc.: *See—*
Eckert, Alton B., Jr.; and Steinmetz, John H., 3,849,632.
Montillier, Jean-Pierre, 3,849,130.
Riley, Gilbert N., 3,848,798.
Pittaro, Richard J.: *See—*
Bantz, Walter J.; Couture, John W.; and Pittaro, Richard J., 3,848,460.
Pitts, Charles A., to Dow Chemical Company, The. Valve assembly. 3,848,670, Cl. 166-224.000.
Plaister, John Edward: *See—*
Baugh, Raymond Ernest; and Plaister, John Edward, 3,848,444.
Plana, Roberto, to AMP Incorporated. Lamp housing assembly. 3,849,641, Cl. 240-151.000.
Plank, Don A., to Exxon Research and Engineering Company. Grafted polyolefins as stabilizer components in polyolefins. 3,849,516, Cl. 260-876.00r.
Plastronics Corporation: *See—*
Bird, Stanford W.; Wasserman, Jerome D.; and Hatley, Earl L. (said Bird, Stanford W., assor. to), 3,848,795.
Plempel, Manfred: *See—*
Boshagen, Horst; and Plempel, Manfred, 3,849,568.
Pletscher, Oskar, to Gebrude Phetscher. Method for the treatment of workpiece surfaces. 3,848,373, Cl. 51-313.000.
Plumer, Roy D., to General Motors Corporation. Shot obturation system for fully telescoped caseless ammunition. 3,848,530, Cl. 102-38.000.
Plummer, William T., to Polaroid Corporation. Projector apparatus and system employing unique screen. 3,848,980, Cl. 352-81.000.
PMCS Company, Inc.: *See—*
Goodwin, Charles W., 3,848,699.
Podkopaev, Vladimir Fedorovich: *See—*
Tesner, Pavel Alexandrovich; Knorre, Vadim Georgievich; Podkopaev, Vladimir Fedorovich; Pakhtusova, Tamara Timofeevna; Baenkevich, Vsevolod Viktorovich; and Astakhov, Arkady Petrovich, 3,849,073.
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Polaroid Corporation: *See—*
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Grey, David S., 3,848,967.
Grey, David S., 3,848,968.
Land, Edwin H., 3,848,979.
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Scholz, Donald T., 3,848,977.
Polc, Stephen D.; and Rhein, Charles F., to Armco Steel Corporation. Process for galvanizing high carbon steel wire. 3,849,167, Cl. 117-51.000.
Poletto, John Frank: *See—*
Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, 3,849,441.
Pollitzer, Ernest L., to Universal Oil Products Company. Hydrocarbon conversion catalyst. 3,849,340, Cl. 252-455.00z.
Polster, Rudolf: *See—*
Schrempp, Klaus; Jettmar, Werner; Polster, Rudolf; and Hartmann, Eduard, 3,849,150.
Polysar Limited-Polysar Limitee: *See—*
Chick, Orest Nicholas; and Means, Graham Neville, 3,849,183.
Smith, Albert Ernest, 3,849,528.
Pompon, Jean-Paul, to Compagnie General d'Electricite. Method of manufacturing a metal-air battery. 3,849,202, Cl. 136-86.00a.
Popov, Valery Georgievich: *See—*
Tetjuev, Vladimir Alexandrovich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Popov, Valery Georgievich; Tjurikov, Pavel Ivanovich; and Kosmatenko, Ivan Egorovich, 3,848,657.
Popp, Walter: *See—*
Bauer, Johann; and Popp, Walter, 3,849,365.
Porter, James M.; Loweth, Carl V.; and Gilster, Kenneth W., to Trane Company, The. Absorption refrigeration machine with second stage generator. 3,848,430, Cl. 62-476.000.
Porter, Kenneth G.: *See—*
Mulvey, Philip A.; and Porter, Kenneth G., 3,849,032.
Possell, Clarence R., to C-H Products Corporation. Valve structure for pressurized liquid dispenser. 3,848,775, Cl. 222-70.000.
Potter, Curtis N.: *See—*
Kroger, Harry; and Potter, Curtis N., 3,849,217.
Pottkotter, Aloysius H. Sheet material ornament with unfoldable upstanding fingers. 3,849,234, Cl. 161-17.000.
Poulson, Don E.: *See—*
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Powell, Harry C., Jr.; and Floyd, Donald W. Ultrasonic cleaning. 3,849,195, Cl. 134-1.000.
Powell, Walter W., to Anderson, Greenwood & Co. Valve. 3,848,632, Cl. 137-514.000.
PPG Industries, Inc.: *See—*
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Raetzsch, Carl W.; Darlington, William B.; and Cunningham, Hugh, 3,849,280.
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Press, Irving D., to Resistoflex Corporation. Method of fabricating a constrictable tube valve element. 3,848,321, Cl. 29-432.200.
Prestridge, Floyd Leon, to Combustion Engineering, Inc. Electric control system. 3,849,285, Cl. 204-305.000.
Price, Walter V. Boat. 3,848,561, Cl. 115-39.000.
Prilutsky, Valery Pavlovich: *See—*
Gurevich, Samuil Mordkovich; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Manoilo, Sergei Afanasievich; and Kykhno, Semen Leonidovich, 3,849,211.
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Procter & Gamble Company, The: *See—*
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Project Laboratories Limited: *See—*

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Proops, William Robert: *See—*
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Propst, Robert L., to Miller, Herman, Inc. Pediatric bed. 3,848,278, Cl. 5-91.000.
Pryor, Rboert C.; and Katz, Howard M., to Phillips Petroleum Company. Two-stage smokeless incinerator with fluidized bed first stage. 3,848,549, Cl. 110-8.00a.
Pullman Incorporated: *See—*
Owen, Harold W., 3,848,863.
Pullman Incorporated, mesne: *See—*
Lopker, Edwin B., 3,849,313.
Puyplat, Oliver, to Cibie Projecteurs. Motor vehicle headlamps. 3,849,642, Cl. 240-413.000.
Pyrotenax Limited: *See—*
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Quindar Electronics, Inc.: *See—*
Wang, Kuei-Send; Epstein, Philip L.; and Lu, John Hsueh Chung, 3,849,764.
Quinley, Adrian L. Outboard motor anti-theft device. 3,848,441, Cl. 70-232.000.
Raceway Products Corporation: *See—*
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Raditz, Michael: *See—*
Shames, Oscar; Hinds, James L.; Palatucci, Gerald J.; and Raditz, Michael, 3,849,777.
Raetzsch, Carl W.; Darlington, William B.; and Cunningham, Hugh, to PPG Industries, Inc. Electrolytic cell including means for preventing atomic hydrogen attack of the titanium backplate member. 3,849,280, Cl. 204-256.000.
Rafeldt, Klaus. Refuse containers, particularly for vehicles. 3,848,841, Cl. 248-99.000.
Raimondi, Victor V.: *See—*
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Raitt, John Stewart: *See—*
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Ralston Purina Company: *See—*
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Ram Partitions Limited: *See—*
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Rand, Robert B. Belt having interchangeable decorative strips. 3,848,270, Cl. 2-311.000.
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Rank Organisation Limited, The: *See—*
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Rank Xerox, Ltd., mesne: *See—*
Takahashi, Isoji; and Sato, Masamichi, 3,849,171.
Rao, V. Durga Nageswar, to Ford Motor Company. Rotary regenerator for a gas turbine engine with resilient mounts for positioning the regenerator. 3,848,663, Cl. 165-8.000.
Rappold, Hermann, & Co., GmbH: *See—*
Uerlichs, Johannes; Muller, Rudolf; and Kuckertz, Wilhelm, 3,848,665.
Raschack, Manfred; and Bub, Oskar, to Knoll A.G. Chemische Fabriken. Method of treating cardiac arrhythmia with 2-(2'-diethylaminoethyl)-3-phenyl-phthalimidine and its salts. 3,849,570, Cl. 424-274.000.
Rauschelbach, Paul A., to Sperry Rand Corporation. Aircraft automatic flight control system. 3,848,833, Cl. 244-77.00d.
Rausing, Hans Anders, to Sobrefina S.A. Packing container. 3,848,760, Cl. 215-12.000.
Raymond, Delmar R.; and Kleinfeld, Jack M., to Black Clawson Fibreclaim, Inc., mesne. Recovery of paper fiber from waste material contaminated with grease wax and/or similar material. 3,849,246, Cl. 162-4.000.
Raytheon Company: *See—*
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Gilliatt, Charles L., 3,849,623.
RCA Corporation: *See—*
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Gruber, Leon Lester, 3,848,301.
Ibaugh, James Louis, 3,849,644.
Peter, Rene; and Lambrich, Hans Peter, 3,849,696.
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Read, Balfour. Rotary compressor with valve member pivoted to an eccentric piston. 3,849,036, Cl. 418-62.000.
Reading, Hugh Thomas, to Readings of Lismore Pty., Limited. Magnetic separator. 3,849,301, Cl. 209-214.000.
Readings of Lismore Pty., Limited: *See—*
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Reagan, Donald W.: *See—*
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Recker, Florian B. Direction indicator for coupling. 3,849,007, Cl. 403-27.000.
Reckitt & Colman Products Limited: *See—*
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Redcay, Paul Wilson, to United States of America, Army. Pulse doppler fuse. 3,849,778, Cl. 343-7.0pf.
Reder, Gerard S. Boat trailer attachment. 3,848,892, Cl. 280-414.00r.
Reeber, Nicholas J.; and Saint John, Karl M., to Hazeltine Corporation. Local correction apparatus for a color previewer. 3,848,856, Cl. 358-76.000.
Reed, Jerry O.; and Dix, James S., to Phillips Petroleum Company. Flame retardant polyolefin compositions of improved color and melt stability. 3,849,352, Cl. 260-23.00h.
Reed, Richard L.: *See—*
Haley, Kenneth M.; Koschak, Dennis F.; Molinaro, Lawrence J.; and Reed, Richard L., 3,848,741.
Rees, Richard W.: *See—*
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Regehr, Ulrich. Louver arrangement for a liquid/gas separator. 3,849,095, Cl. 55-394.000.
Reguitti, Silvana. Crib mattress adjusting device. 3,848,277, Cl. 5-11.000.
Reid, James Angus Wilson: *See—*
Jackson, Peter Frederick; and Reid, James Angus Wilson, 3,849,380.
Reilly, Thomas A.; Reitz, Charles F.; and Smith, Robert D., to Du Pont de Nemours, E. I., and Company. Plastic heat exchange apparatus and a method for making. 3,848,660, Cl. 165-1.000.
Reinell Boats, Inc.: *See—*
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Reitboech, Herbert J. P.; and Brody, Thomas P., to Westinghouse Electric Corporation. Object identifying apparatus. 3,849,633, Cl. 235-61.12n.
Reitz, Charles F.: *See—*
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Reliable Electric Company: *See—*
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Remers, William Alan: *See—*
Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, 3,849,441.
Remick, Cassius D., to Electrohome Limited. Electrostatic precipitator. 3,849,090, Cl. 55-143.000.
Remington Arms Company, Inc.: *See—*
Catlin, Robert T., 3,848,859.
Renaux, Charley, to Commissariat a l'Energie Atomique. Handling system for nuclear fuel assemblies. 3,848,423, Cl. 62-45.000.
Renner, Alfred; and Haug, Theobald, to Ciba-Geigy Corporation. Storage stable mixtures of bis or tris imides and polyamines. 3,849,374, Cl. 260-47.0cp.
Rensch, Eberhard G. Building frame structure. 3,848,382, Cl. 52-263.000.
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Reserve Mining Company: *See—*
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Rhea, Lyle G. Refrigeration system and process. 3,848,424, Cl. 62-115.000.
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Rheinmetall G.m.b.H., Firma: *See—*
Scheipner, Robert Hans; Schlussler, Helmut; and Germershausen, Raimund, 3,848,464.
Rhodes, Raymond Dewey. Boat seat. 3,848,921, Cl. 297-184.000.
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Biarnais, Paul; Falize, Claude; and Sitaud, Gilbert, 3,849,475.
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Rich, Harry M., to Ram Partitions Limited. Locking device for sliding panels. 3,848,908, Cl. 292-189.000.
Rich, Leonard G.: *See—*
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Richards, Lawrence I.; and Gould, Ronald R., to Autoquip Corporation. Safety lock for bascule bridge. 3,848,288, Cl. 14-41.000.
Richards, Oran D. Hand grip testing device for body weighing scales. 3,848,468, Cl. 73-380.000.
Richardson, Brian Peter, to Sandoz Ltd.; a/k/a Sandoz AG. Method of treating nephrosis. 3,849,562, Cl. 424-261.000.
Richardson Company, The: *See—*
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Richter, Johan C. F. C., to Kamyr Aktiebolag. Screening and feeding device for cellulose digesters. 3,849,247, Cl. 162-237.000.
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Riker Laboratories, Inc.: *See—*
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Riley, Gilbert N., to Pitney-Bowes, Inc. Credit system for postage meters. 3,848,798, Cl. 235-101.000.
Ring, Richard: *See—*
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Rist, Otto. Machine for the automatic insertion of slot insulations or armatures of electrical machines. 3,848,317, Cl. 29-205.00e.
Ritchie, William B., Jr.: *See—*
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Rittel, Werner; Brugger, Max; Kamber, Bruno; Riniker, Bernhard; Sieber, Peter; and Greven, Hendrik Marie, to Ciba-Geigy Corporation. Analogues of human thyrocalcitonin. 3,849,388, Cl. 260-112.500.
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Ritter, Robert A.; and Turnbull, David G., to Ritter Engineering Ltd. Process, system and apparatus and components thereof for the separation of gaseous components. 3,849,089, Cl. 55-33.000.
Rivlin, Charles A.: *See—*
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Roberge, Kenneth Joseph, to Bell Telephone Laboratories, Incorporated. Tone ringer. 3,849,606, Cl. 179-84.00t.
Roberts, Allan; deceased (by Roberts, Margaret Agnes), to Lever Brothers Company. Treatment of paperboard. 3,849,184, Cl. 117-155.0ua.
Roberts, Margaret Agnes: *See—*
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Robichaud, Edmund J. Adjustable toolholder. 3,848,486, Cl. 82-36.00r.
Robins, Roland K.; and Khwaja, Tasneem A., to International Chemical & Nuclear Corporation. 3',5' Cyclic monophosphate nucleosides. 3,849,397, Cl. 260-211.50r.
Robot Foto und Electronic GmbH & Co. KG: *See—*
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Roche, William J., to GTE Sylvania Incorporated. Single base, self-igniting fluorescent lamp. 3,849,699, Cl. 315-46.000.
Rochfort, William Phillip King, to Kerbit Pty. Ltd. Tandem wheel supports. 3,849,017, Cl. 404-108.000.
Rockwell International Corporation: *See—*
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Samuelsen, Bryan; and Liebman, Alfred A., 3,848,806.
Rodot, Frederic. Transportation system. 3,848,537, Cl. 104-154.000.
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Rokugawa, Kyuji; Katoh, Yoshiki; Kuninaka, Akira; and Yoshino, Hiroshi, to Yamasa Shoyu Kabushiki Kaisha. Production of synthetic polynucleotides. 3,849,249, Cl. 195-28.00n.
Rolison, Darrell Edward: *See—*
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Rottering, Quintin N., to Maytag Company, The. Precleaning a token-actuated laundry washing machine. 3,848,437, Cl. 68-12.00r.
Roueche, Armand; Mueller, Willy; and Mory, Rudolf, to Ciba Geigy AG. Monoazo pigments containing a hydroxynaphthoylaminoacridone radical. 3,849,394, Cl. 260-155.000.
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Rudloff, Bernard. Opening and individual separation of fibers. 3,848,296, Cl. 19-81.000.
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Rumping, Stephanus Nicolaas Hendrick, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Dust shield for use with a motion transmitting rod. 3,848,861, Cl. 266-25.000.
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Russell, Stanley L., to Stromberg-Carlson Corporation. Solid state continuity check circuit. 3,849,605, Cl. 179-16.0aa.
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Salters, Roelof Herman Willem, to U.S. Philips Corporation. Method of manufacturing a semiconductor device and semiconductor device manufactured by using the method. 3,849,216, Cl. 148-187.000.
Saltini, Fabrizio; and Eccettuato, Vittorio, to Olivetti, Ing., C., & C., S.p.A. Electronic computer. 3,849,634, Cl. 235-92.0dp.
Saltzberg, Burton R.: *See—*
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Sanders, Frederick W., to Mead Corporation, The. Electrolytic system. 3,849,278, Cl. 204-237.000.
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Santala, Teuvo, to Texas Instruments, Inc. Catalysts for conversion of nitrogen oxide pollutants in automotive exhaust gases. 3,849,342, Cl. 252-462.000.
Santana, Augustin Zabaleta. Rotary machine tool. 3,848,489, Cl. 82-61.000.
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Schaefer, Roger W., to Safariland Leather Products. Ballistic clip board. 3,848,547, Cl. 109-49.500.
Schaeff, Hans. Backhoe apparatus. 3,848,756, Cl. 214-138.00c.
Schall, Robert A., to Dorr-Oliver Incorporated. Air pressure-actuated double-acting diaphragm pump. 3,849,033, Cl. 417-454.000.
Schaller, Kurt: *See—*
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Scheiner, Bernard J.; Lindstrom, Roald E.; and Henrie, Thomas A., to United States of America, Interior. Electro-oxidative method for the recovery of molybdenum from sulfide ores. 3,849,265, Cl. 204-86.000.
Scheipner, Robert Hans; Schlussler, Helmut; and Germershausen, Raimund, to Rheinmetall G.m.b.H., Firma. Underwater measuring buoy system. 3,848,464, Cl. 73-170.00a.
Schellenberg, James M.; and Jones, Raymond R., to Westinghouse Electric Corporation. Method and system for varying the characteristics of a dispersive delay line. 3,849,745, Cl. 333-31.00r.
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Schied, Thomas; and Wright, Edward J., to Sherman Car Wash Equipment Co. Safety shield. 3,848,542, Cl. 104-172.00b.
Schieser, Warren J., to Corco, Inc. Disposable reservoir package for liquid-dispenser having valve and operating float. 3,848,776, Cl. 222-105.000.
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Schlussler, Helmut: *See—*
Scheipner, Robert Hans; Schlussler, Helmut; and Germershausen, Raimund, 3,848,464.
Schmeidl, Karl, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Rhodamine dye solutions. 3,849,065, Cl. 8-25.000.
Schmidt, Andreas: *See—*
Brunetti, Heimo; Schwarzenbach, Kurt; and Schmidt, Andreas, 3,849,492.
Schmidt, Felix Helmut: *See—*
Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Thiel, Max; and Weyer, Rudi, 3,849,417.
Schmidt, Franz: *See—*
Fuchs, Hugo; Ricker, Ernst; Schmidt, Franz; Schwartz, Erich; and Sperber, Heinrich, 3,849,444.
Schmidt, Fritz; Matthaus, Gunther; and Massek, Peter, to Siemens Aktiengesellschaft. Current feeding arrangement for electrical apparatus having low temperature cooled conductors. 3,849,589, Cl. 174-21.00r.
Schmidt, Gertraud A., to General Cable Corporation. Method of applying and cooling low density polyethylene cable insulation. 3,849,192, Cl. 117-232.000.
Schmidt, Richard, to Procter Paint and Varnish Co., Inc. Means for depositing lids on filled containers and then seating said lids in sealing condition on such containers. 3,848,396, Cl. 53-43.000.
Schnettler, Richard A.: *See—*
Suh, John T.; and Schnettler, Richard A., 3,849,400.
Scholz, Donald T., to Polaroid Corporation. Multipurpose, audio-visual cassette system. 3,848,977, Cl. 352-14.000.
Schramm, Harold J.; McCullough, John R.; and Yarnall, Joseph P., Jr., to Schramm, Inc. Air trap. 3,848,623, Cl. 137-186.000.
Schramm, Inc.: *See—*
Schramm, Harold J.; McCullough, John R.; and Yarnall, Joseph P., Jr., 3,848,623.
Schreiber, Sidney P.: *See—*
Calamari, Timothy A., Jr.; Reeves, Wilson A.; Schreiber, Sidney P.; and Cooper, Albert S., Jr., 3,849,067.
Schrempp, Klaus; Jettmar, Werner; Polster, Rudolf; and Hartmann, Eduard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of pigment pastes for printing ink and varnish paint. 3,849,150, Cl. 106-288.00q.
Schreyer, Gerd: *See—*
Hoffmann, Peter; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,849,484.
Schroeder, Herbert M.: *See—*

Farah, Basil S.; and Schroeder, Herbert M., 3,849,360.
Schultz, Ward E.: *See—*
McKinlay, Philip F.; Smith, Harry D., Jr.; and Schultz, Ward E., 3,849,646.
Schulze, Heinz, to VEB Pentacon Dresden Kamera- und Kinowerke. Photographic camera with preselectable diaphragm aperture. 3,849,785, Cl. 354-40.000.
Schulze, Reinhold, to Norddeutsche Affinerie. Process for bonding particulate solid materials to a substrate. 3,849,180, Cl. 117-100.00b.
Schupak, Grigory Bentsionovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Kumysh, Ilya Iosifovich; Tsykulenko, Anatoly Konstantinovich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Bondarenko, Oleg Petrovich; and Bogachenko, Alexei Georgievich, 3,849,588.
Schuss, Jack Ascher, to Combustion Engineering, Inc. Computer based plant protection system. 3,849,056, Cl. 431-24.000.
Schuster, Robert W.: *See—*
Eastman, James M.; and Schuster, Robert W., 3,849,021.
Schwab, Helmut; and Hoover, Troy Eugene, to National Cash Register Company, The. Pressure-sensitive record unit comprising a mixture of two chromogenic compounds. 3,849,164, Cl. 117-36.800.
Schwartz, Erich: *See—*
Fuchs, Hugo; Ricker, Ernst; Schmidt, Franz; Schwartz, Erich; and Sperber, Heinrich, 3,849,444.
Schwarz, Eric George: *See—*
Marlin, Lawrence; and Schwarz, Eric George, 3,849,156.
Schwarz, Hans-Helmut: *See—*
Immel, Otto; and Schwarz, Hans-Helmut, 3,849,335.
Schwarzenbach, Kurt: *See—*
Brunetti, Heimo; Schwarzenbach, Kurt; and Schmidt, Andreas, 3,849,492.
Schwarzler, Peter: *See—*
Ghibu, Michael; Bohn, Gerhard; and Schwarzler, Peter, 3,849,724.
Schweppe, John V., to PPG Industries, Inc. Blanket feed binder applicator. 3,848,565, Cl. 118-234.000.
Schweyen, Paul R.: *See—*
Fetscher, Charles A.; and Schweyen, Paul R., 3,849,383.
Scigliano, Robert E. Receptacle-bird feeder. 3,848,570, Cl. 119-51.00r.
SCM Corporation: *See—*
Bordenca, Carl; and Derfer, John M., 3,849,571.
Hall, Richard C.; Kidd, Norman D.; and Daravingas, George V., 3,849,579.
Scott, John W.: *See—*
Kozlowski, Robert H.; Sieg, Robert P.; and Scott, John W., 3,849,082.
Scott, Kelley E., Jr.; Kemper, Daryl M.; Grove, Lloyd E.; and Kiess, Ronald J., to CTS Corporation. Piezoelectric crystal units with malleable terminals and epoxy-filler sealant. 3,849,681, Cl. 310-9.100.
Scottish Agriculture Industries Limited: *See—*
Harris, Frederick John; and Raitt, John Stewart, 3,849,103.
SCP-Exploatering AB: *See—*
Mogren, Hakan Lars; Hedenskog, Gudmund Oscar; and Enebo, Lennart Eugen, 3,848,812.
Seaman, Russell L.: *See—*
Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,849,407.
Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,849,470.
Searle, G. D., & Co.: *See—*
Zawadzki, Joseph F.; and Chinn, Leland J., 3,849,404.
Seberini, Febo; Valvassori, Alberto; Tavazzani, Carlo; and Pagliari, Alberto, to Montecatini Edison S.p.A. Process for preparing impact-resistant polymeric compositions containing graft copolymers. 3,849,518, Cl. 260-878.00r.
Sedlacek, William S., to Reliable Electric Company. Clip terminal and applicator tool combination. 3,848,954, Cl. 339-97.00r.
Seedorf, Robert R., to Moffitt, Roy W., Company, The. Multi-station printing system. 3,848,528, Cl. 101-115.000.
Seidel, Joseph, to Westinghouse Electric Corporation. Iron electrode paste for alkaline battery plates. 3,849,198, Cl. 136-25.000.
Seifert, Peter, to Black Clawson Company, The. Method and apparatus for screening paper fiber stock. 3,849,302, Cl. 209-273.000.
Seiko Koki Kabushiki Kaisha: *See—*
Nakagawa, Tadashi, 3,849,787.
Ogihara, Masuo; and Watanabe, Masanori, 3,849,788.
Seith, Robert E.; and Bundy, Otto M., to Gulf States Paper Corporation. Devices, systems and methods employing knitting fabric mulch. 3,848,359, Cl. 47-56.000.
Seitz, Karl: *See—*
Begrich, Rainer; and Seitz, Karl, 3,849,413.
Sejpal, Vasant D.; Lueschen, William J.; and Weinstein, Bernard, to American Home products Corporation. Aerosol dispensing system for anhydrous edible fat compositions. 3,849,580, Cl. 426-116.000.
Sekine, Hiroshi: *See—*
Ishizaki, Keizo; Sekine, Hiroshi; Gondo, Hisashi; Wada, Koji; Kawano, Tsuyoshi; Watanabe, Hidekazu; Kanbayashi, Gou; and Maruyama, Tadasatsu, 3,849,209.
Sela, Michael: *See—*
Teitelbaum, Dvora; Gan, Ramat; Meshorer, Asher; Hirshfeld, Tsvi; Arnon, Ruth; and Sela, Michael, 3,849,550.
Selfix, Inc.: *See—*
Levy, Leon M., 3,848,843.
Selk, Ben F.: *See—*
McCormick, Larry L.; and Selk, Ben F., 3,848,950.
Seminiano, Herman J. Dry fire cartridge or shot shell. 3,848,350, Cl. 42-1.00n.
Semrow, Walter J., to Dynamics Corporation of America. Apparatus for peeling vegetables. 3,848,524, Cl. 99-631.000.
Senn, Werner Josef. Apparatus for deciphering cipher code present at information carriers in the form of character groups of the same number of digits. 3,849,599, Cl. 178-53.10r.
Sessa, Paul A.: *See—*
Ferment, George R.; Prince, Arthur E., Jr.; and Sessa, Paul A., 3,849,529.
Setheny, Michael J.: *See—*
Anderson, Richard T.; and Setheny, Michael J., 3,848,749.
Seto, Kunihira: *See—*
Hibino, Noburo; Seto, Kunihira; Kobayashi, Teruo; and Inoue, Kazuo, 3,849,139.
Shaffner, Janice V.: *See—*
Mentha, John W.; Shaffner, Janice V.; and Cresswell, Ronald M., 3,849,416.
Shames, Oscar; Hinds, James L.; Palatucci, Gerald J.; and Raditz, Michael, to United States of America, Navy. Interrogator-transponder fruit reducer. 3,849,777, Cl. 343-6.51c.
Shank, Clifford A.: *See—*
Sakaide, Roy R.; and Shank, Clifford A., 3,849,653.
Shank, Wayne C., to Avco Corporation. Differential gearing for gas turbine engine. 3,848,482, Cl. 74-710.000.
Sharrow, Clarence C. Load fasteners. 3,848,889, Cl. 280-179.00a.
Shavel, John, Jr.: *See—*
Von Strandtmann, Max; Klutchko, Sylvester; Kaminsky, Daniel; and Shavel, John, Jr., 3,849,446.
Shaw, Woodrow G.: *See—*
Blewitt, Donald D.; and Shaw, Woodrow G., 3,849,754.
Blewitt, Donald D.; and Shaw, Woodrow G., 3,849,755.
Sheehan, Hilary W.: *See—*
Linam, Richard Lee; and Sheehan, Hilary W., 3,849,626.
Sheehan, John F. Dental floss holder. 3,848,613, Cl. 132-92.00r.
Shen, Tsung-Ying: *See—*
Witzel, Bruce E.; and Shen, Tsung-Ying, 3,849,572.
Shepard Niles Crane & Hoist Corporation: *See—*
Rundle, Frederick Stanley, 3,848,703.
Shepherd, Thomas H.; and Gould, Francis E., to National Patent Development Corporation. Method of preparing surgical sutures. 3,849,185, Cl. 117-161.0ub.
Shepler, Terry H.: *See—*
Taft, David D.; and Shepler, Terry H., 3,849,353.
Sheppard, Richard H. Dual hydraulic power steering system with hydrostatic control. 3,848,693, Cl. 180-79.20r.
Sheratte, Martin B., to McDonnell, Douglas, Corporation. Functional fluids. 3,849,324, Cl. 252-78.000.
Sherman Car Wash Equipment Co.: *See—*
Schied, Thomas; and Wright, Edward J., 3,848,542.
Shesser, Arthur B.: *See—*
Kuchinsky, Saul; Shesser, Arthur B.; Somlyody, Arpad; and Fehnel, Richard B., 3,849,693.
Shiba, Keisuke; and Sato, Akira, to Fuji Photo Film Co., Ltd. Silver halide supersensitized photographic emulsion. 3,849,147, Cl. 96-124.000.
Shields, James E., to Lilly, Eli, and Company. Intermediates to the 5-PHE analog of LHRH. 3,849,389, Cl. 260-112.500.
Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, to Ishihara Sangyo Kaisha Ltd. Diphenylethers having herbicidal properties. 3,849,53, Cl. 260-613.00r.
Shimamura, Akira; and Matsuzaki, Kunio, to Shindengen Kogyo Kabushiki Kaisha. Electronic flash apparatus. 3,849,703, Cl. 315-241.005.
Shimano, Keizo; and Nishino, Tokiharu. Bicycles-lading apparatus. 3,848,784, Cl. 224-42.10f.
Shimba, Hiroshi: *See—*
Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,849,591.
Shimizu, Haruji: *See—*
Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685.
Shindengen Kogyo Kabushiki Kaisha: *See—*
Shimamura, Akira; and Matsuzaki, Kunio, 3,849,703.
Shioyama, Tadao: *See—*
Koda, Minoru; Shioyama, Tadao; and Nishiyama, Akio, 3,849,795.
Shipitsin, Svyatoslav Sergeevich: *See—*
Kazakov, Nikolai Efimovich; Shipitsin, Svyatoslav Sergeevich; Minchenko, Veniamin Alexandrovich; Kudryavtsev, Innokenty Mikhailovich; Zimin, Vladimir Afanasievich; and Pervitsky, Boris Antonovich, 3,849,046.
Shirai, Masayuki: *See—*
Toshioka, Tokuma; Takagi, Haruyuki; and Shirai, Masayuki, 3,848,368.
Shirato, Hajime, to Nippon Electric Company, Limited. Memory circuit. 3,849,767, Cl. 340-173.0dr.
Shiroki, Masami: *See—*

Nakanishi, Michio; Araki, Kazuhiko; Tahara, Tetsuya; and Shiroki, Masami, 3,849,405.

Shiurila, John, to Singer Company, The. Latch/unlatch mechanism for cassette holder door. 3,848,907, Cl. 292-81.000.

Shoemaker, Edwin J.; Gensler, Edwin G.; and White, David B., to La-Z-Boy Chair Company. Mobile chair base having locking means. 3,848,924, Cl. 297-434.000.

Shoji, Akira; Yanagawa, Hitoshi; and Hirashima, Takashi, to Canon Kabushiki Kaisha. Microfilm reader. 3,848,982, Cl. 353-27.000.

Shoji, Yukinobu: *See—*
Iwasa, Junzo; Maruto, Shunsuke; Ikeda, Noboru; Nakamura, Keiji; and Shoji, Yukinobu, 3,849,561.

Showa Denko Kabushiki Kaisha: *See—*
Yoshida, Toyozi; Ushiyama, Kazuhisa; and Yamanaka, Minoru, 3,849,114.

Shreev, George E., to Symmonds, Gene B. Ball bearing feeder. 3,848,771, Cl. 221-105.000.

Shunan Denko Kabushiki Kaisha: *See—*
Yoshida, Toyozi; Ushiyama, Kazuhisa; and Yamanaka, Minoru, 3,849,114.

Siebein, Walter A.: *See—*
Gegenheimer, Harold W.; Siebein, Walter A.; and Hancock, George J., 3,848,529.

Sieber, Peter: *See—*
Rittel, Werner; Brugger, Max; Kamber, Bruno; Riniker, Bernhard; Sieber, Peter; and Greven, Hendrik Marie, 3,849,388.

Sieg, Robert P.: *See—*
Kozlowski, Robert H.; Sieg, Robert P.; and Scott, John W., 3,849,082.

Siegle, John Carl; and Wolfe, Homer Bagenstose, to Du Pont de Nemours, E. I., and Company. Polymeric UV stabilizers for substantially hydrocarbon polymers. 3,849,373, Cl. 260-47.0up.

Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, to Ciba-Geigy AG. Process for the optical brightening of organic materials. 3,849,163, Cl. 117-33.50t.

Siele, Victor I.; and Gilbert, Everett E., to United States of America, Army. Process for preparing 1,5-diacetyl-3,7-endomethylene-1,3,5,7-tetraazacyclooctane. 3,849,414, Cl. 260-248.0ns.

Siemens Aktiengesellschaft: *See—*
Dall'Armi, Georg V., 3,848,999.
Karlikowski, Jupp; and Michel, Hans, 3,849,135.
Leistner, Werner, 3,849,683.
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Simonis, Wolfgang: *See—*
Flockenhaus, Claus; Simonis, Wolfgang; Beck, Kurt-Gunther; and Echterhoff, Heinrich, 3,849,258.

Simonsen, James. Method and apparatus for custom molding shoes and boots. 3,848,287, Cl. 12-142.00p.

Singer Company, The: *See—*
Duncan, John L.; and Duthie, Fredrick W., 3,849,684.
Mishcon, Lester; and Reagan, Donald W., 3,848,432.
Shiurila, John, 3,848,907.

Sitaud, Gilbert: *See—*
Biarnais, Paul; Falize, Claude; and Sitaud, Gilbert, 3,849,475.

Sizer, Phillip S.; and Young, Carter R., to Otis Engineering Corporation. Apparatus for treating wells. 3,848,668, Cl. 166-72.000.

Skarbo, Roald R., to Kennecott Copper Corporation. Cobalt stripping. 3,849,534, Cl. 423-139.000.

Skil Corporation: *See—*
Legler, John G., 3,848,680.

Skinner, Davis A., to Union Oil Company of California. Calcium-strontium smoke inhibitors for diesel fuels. 3,849,084, Cl. 44-76.000.

Skubal, John J.: *See—*
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Slaugenhaupt, Burl L.: *See—*
Bruno, Marshall J.; Jarrett, Noel; and Slaugenhaupt, Burl L., 3,849,119.

Sleight, Arthur W., to Du Pont de Nemours, E. I., and Company. Compound $Cd_2Os_2O_7$ having pyrochlore crystal structure. 3,849,544, Cl. 423-593.000.

Slick Corporation, The: *See—*
Bakke, Even; and Scapicchio, Celestino G., 3,849,092.

Small, Fred: *See—*
Allen, Archelaius Dawson; and Small, Fred, 3,848,420.

Smirnov, Viktor Sergeevich: *See—*
Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; and Aladyshev, Sergei Ivanovich, 3,849,076.

Smit, Henry, to Tessell, Leslie E. Safety guard for presses. 3,848,721, Cl. 192-133.000.

Smith, Albert Ernest, to Polysar Limited-Polysar Limitee. Microporous polymer sheets. 3,849,528, Cl. 264-49.000.

Smith, Frank R., Jr.: *See—*
Di Salvo, Walter; Smith, Frank R., Jr.; and Kenney, Edward J., 3,849,327.

Smith, George W.; and Hayden, Daniel B., to General Motors Corporation. Homeotropic alignment additive for liquid crystals. 3,848,966, Cl. 350-160.0lc.

Smith, Harry A., to Dow Chemical Company, The. Latent curing epoxy resin-aromatic disulfonamide compositions. 3,849,375, Cl. 260-47.0en.

Smith, Harry D., Jr.: *See—*
McKinlay, Philip F.; Smith, Harry D., Jr.; and Schultz, Ward E., 3,849,646.

Smith, Herchel: *See—*
Yardley, John P.; Rees, Richard W.; and Smith, Herchel, 3,849,403.

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Smith, John W. Tray unit. 3,848,745, Cl. 211-49.00d.

Smith Kline Corporation: *See—*
Caldwell, Henry Cecil, 3,849,573.
Hawley, Margaret Grant, 3,848,348.

Smith, Leslie William; Wates, Michael John; and Tait, Robert John, to Norgren, C. A., Co. Means for coupling fluid control components in fluid lines. 3,848,626, Cl. 137-269.000.

Smith, Millard F.: *See—*
Smith, Millard F.; and Anusauckas, Anthony V. (said Anusauckas assor. to), 3,848,417.

Smith, Millard F.; and Anusauckas, Anthony V., said Anusauckas assor. to Smith, Millard F. Self-righting floating booms. 3,848,417, Cl. 61-1.00f.

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Reilly, Thomas A.; Reitz, Charles F.; and Smith, Robert D., 3,848,660.

Smith, Roy J., Jr.: *See—*
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Smythe, George Edward; and Orton, Geoffrey Keith, to U.S. Philips Corporation. Electronically-controlled gas pressure meter. 3,848,591, Cl. 128-145.800.

Snam Progetti, S.p.A.: *See—*
Manara, Giovanni; and Fattore, Vittorio, 3,849,337.
Maspero, Federico; and Perrotti, Emilio, 3,849,510.

Snavely, Kenneth E., to Phillips Petroleum Company. Conductive articles made from butadiene/styrene block copolymers and carbon black. 3,849,345, Cl. 252-511.000.

Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Ando, Satoshi; Matsui, Masao; and Ogata, Fumimaro, 3,849,044.

Snover, John A.; Waibel, Joseph H.; and Daniels, Arthur L., to Dow Chemical Company, The. Lithium magnesium aluminum hydride. 3,849,542, Cl. 423-644.000.

Snyder, Amandus D.; and Taft, William K., to Olin Mathieson Chemical Corporation. Polybutadiene compositions and hydrocarbons thickened therewith. 3,849,081, Cl. 44-7.00e.

Soardo, Paolo; and Pasta, Mario, to Istituto Elettrotecnico Nazionale Galileo Ferraris. Digital display optical pyrometer. 3,849,000, Cl. 356-45.000.

Sobrefina S.A.: *See—*
Rausing, Hans Anders, 3,848,760.

Societa' Italiana Resine S.I.R. S.p.A.: *See—*
Cocuzza, Gioacchino, 3,849,262.

Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique (Alcatel): *See—*
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Societe Anonyme Automobiles Citroen: *See—*
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Societe Anonyme D.B.A.: *See—*
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Societe Anonyme dite: L'Oreal: *See—*
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Kalopissis, Gregoire, 3,849,576.

Societe Dauphinoise Electrique: *See—*
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Societe des Aciers Fins de l'Est: *See—*
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Societe Grenobloise d'Etudes et d'Applications Hydrauliques: *See—*
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Societe Industrielle de Brevets et d'Etudes S.I.B.E.: *See—*
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Societe Nationale Industrielle Aerospatiale: *See—*
Jannot, Michel Rene; Vaillant, Robert Guillaume; and Dzalba-Lyndis, Serge Yvan, 3,848,697.

Soes, Lucas, to AMP Incorporated, mesne. Zero insertion levered interference connection. 3,848,948, Cl. 339-64.00r.

Solbeck, Erik. Extrusion apparatus. 3,849,051, Cl. 425-376.000.

Solomon, David Henry: *See—*
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Solvay & Cie: *See—*
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Sony Corporation: *See—*

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Morita, Koji; and Sato, Tadashi, 3,849,731.
Ohshima, Syunji, 3,849,600.

Soper, Quentin F.; and Kline, Granville B., to Lilly, Eli, and Company. Herbicidal method employing arylsulfonylureas or salts thereof. 3,849,110, Cl. 71-103.000.

Sorrentino, Benjamin J. Method and apparatus for decontaminating a rinse liquid. 3,849,197, Cl. 134-10.000.

Soya, Masahiro, to Tokico Ltd. System for detecting abnormalities in pipelines. 3,848,458, Cl. 73-40.50r.

Sparks, William J.: *See—*
Oseroff, Herbert B.; and Sparks, William J., 3,848,480.

Specovius, Joachim: *See—*
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Speed Fab-Crete Corporation: *See—*
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Mast, Aquila D., 3,848,526.
Rauschelbach, Paul A., 3,848,833.
Wathen, Robert Lucian, 3,848,914.

Spillane, Leo J.; Alexander, Stephen H.; and Bramble, Reba H., to Gulf States Asphalt Co. Inc. Method of joining and sealing asphalt planks for a reservoir or the like. 3,849,229, Cl. 156-304.000.

Spinner GmbH Elecktrotechnische Fabrik: *See—*
Treczka, Leo, 3,849,743.

Springer, Joseph E. Quick release stopper rod for steel mill ladle. 3,848,781, Cl. 222-559.000.

Squibb, E. R., & Sons, Inc.: *See—*
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Hoehn, Hans; and Chasin, Mark, 3,849,411.
Vogt, Berthold Richard; Bernstein, Jack; and Weisenborn, Frank Lee, 3,849,490.
Yale, Harry Louis, 3,849,424.

St. Clair, Mel. Therapeutic apparatus. 3,848,607, Cl. 128-400.000.

Staal, Gerardus B.: *See—*
Henrick, Clive A.; and Staal, Gerardus B., 3,849,466.

Stacee Manufacturing, Inc.: *See—*
Stanley, Edward I.; and Batchelor, Donald G., 3,849,055.

Stacey, Eric J.; and Strycula, Eugene C., to Westinghouse Electric Corporation. Hybrid power filters employing both active and passive elements. 3,849,677, Cl. 307-295.000.

Stahly, Frederick A.; and Merrill, Stewart H., to Eastman Kodak Company. Liquid electrographic development process. 3,849,165, Cl. 117-37.0le.

Stanczyk, Martin H.; Sullivan, Paul M.; and Spendlove, Max J., to United States of America, Interior. Continuous process for mechanically separating materials contained in urban refuse. 3,848,813, Cl. 241-19.000.

Standard Oil Company: *See—*
Fields, Ellis K., 3,849,274.
Hensley, Albert L., Jr., 3,849,296.
Mayer, James F.; and Raimondi, Victor V., 3,849,367.

Standard Register Company, The: *See—*
Mays, John D.; and McClannan, Jack L., 3,849,170.

Stanford Research Institute: *See—*
Frohbach, Hugh F., 3,849,698.
Swidler, Ronald; and Benedict, Harris M., 3,849,116.

Stange, Klaus K., to Xerox Corporation. Donor apparatus. 3,848,566, Cl. 118-637.000.

Stanley, Edward I.; and Batchelor, Donald G., to Stacee Manufacturing, Inc. Liquid fuel heater improvement. 3,849,055, Cl. 431-7.000.

Stanley, Michael Richard; and Kimes, Lucas James, to Boeing Company, The. Aircraft engine installation. 3,848,832, Cl. 244-54.000.

Stanray Corporation: *See—*
Manyek, Leonard F., 3,848,513.

Stanton, Stephen L.: *See—*
Verwey, William G. A.; and Stanton, Stephen L., 3,848,790.

Starck, Clemens B.: *See—*
Earhart, Howard F.; Jacoby, Frederick J.; and Starck, Clemens B., 3,849,191.

Staubli Ltd.: *See—*
Wicker, Walter, 3,848,643.

Stauffer Chemical Company: *See—*
Lengnick, Guenther Fritz, 3,849,462.
Teach, Eugene G., 3,849,464.
Weil, Edward D., 3,849,409.
Wolf, George Robert, 3,849,357.

Ste. Nouvelle de Roulements (S. N. R.): *See—*
Garcin, Georges, 3,848,370.

Steele Chemicals Co., Ltd.: *See—*
Kruger, Gunther, 3,849,402.

Stein, Theodore W.; Gilman, Harold; and Bobeck, Richard L., to Halcon International, Inc. Epoxidation process. 3,849,451, Cl. 260-348.50l.

Steinback, Clarence I., to Acrometal Products, Inc. Method of forming a tape reel hub by extrusion. 3,848,310, Cl. 29-159.300.

Steinbrook, Seymour E.: *See—*
Kent, Francis Joseph; and Steinbrook, Seymour E., 3,848,525.

Steinbruchel, Armando B., to Aqua-Chem, Inc. Distillation apparatus. 3,849,259, Cl. 202-174.000.

Steiner, Alois, to Ruti Machinery Works Ltd. Shed forming device. 3,848,642, Cl. 139-28.000.

Steinhards, Arnolds: *See—*
Kornis, Gabriel; Steinhards, Arnolds; Nidy, Eldon George; and Vostral, Henry J., 3,849,106.

Steinmetz, John H.: *See—*
Eckert, Alton B., Jr.; and Steinmetz, John H., 3,849,632.

Stella, Leo; and Sarbello, Alfred J., to Terrington Company, The. Bearing and bearing seal. 3,848,938, Cl. 308-36.100.

Stemmle, Denis J., to Xerox Corporation. Sheet sorting apparatus. 3,848,868, Cl. 271-173.000.

Stenhagen, Einar August: *See—*
Dinh-Nguyen, Nguyen; and Stenhagen, Einar August, 3,849,458.

Steppan, Hartmut, to Kalle Aktiengesellschaft. Process for the production of polycondensation products of aromatic diazonium compounds. 3,849,392, Cl. 260-141.000.

Sterigard Corporation: *See—*
Bruce, Roger K.; Marhold, Werner; and Adickes, Cecil F., 3,849,053.

Stevens, Harry A.; and Randolph, Allan E., Sr., to Dayton Progress Corporation. Die and spring assemblies having particular application to stripper plates. 3,848,496, Cl. 83-133.000.

Stevens, J. P., & Co., Inc.: *See—*
Tesoro, Giuliana C.; and Ring, Richard, 3,849,401.

Stichting Ontwikkeling Verpakkingsmethaden In de Zuivelindustrie: *See—*
Frieling, Teunis; and Bruggencate, Teunis Ten, 3,849,227.

Stocker, Kurt F.: *See—*
Percs, Edmund E.; Stocker, Kurt F.; Blomback, Birger; Blomback, Margareta; and Hessel, Birgit, 3,849,252.

Stohr, Jacques Andre, to Commissariat a l'Energie Atomique. Assembly of substantially parallel metallic surfaces. 3,848,314, Cl. 29-191.000.

Stone, Dan Frederick: *See—*
Grantt, David Lawrence; Stone, Dan Frederick; and Townsend, Timothy Joseph, 3,848,766.

Storandt, Duane L. Charcoal fire starter and grill. 3,848,577, Cl. 126-25.00b.

Stork Amsterdam B.V.: *See—*
van der Winden, Johannes Bernardus, 3,848,746.

Storm, Roger S.: *See—*
Economy, James; and Storm, Roger S., 3,849,362.

Stournas, Stamoulis: *See—*
Bridger, Robert F.; Heiba, El-Ahmadi I.; and Stournas, Stamoulis, 3,849,320.

Strandell, Per-Olof, to AB Metalform. Rolling method and a rolling mill for carrying out the method. 3,848,447, Cl. 72-199.000.

Strasbaugh, Ray Howard. Cylometer. 3,848,339, Cl. 33-174.00a.

Straub, Melvin J.: *See—*
Aanestad, Robert D.; Straub, Melvin J.; and Norgard, Edward J., 3,848,772.

Strawn, Charles F., to Johnson Service Company. Control circuit for an electromechanical actuator. 3,848,411, Cl. 60-432.000.

Streater, August L., to Franklin Electric Co., Inc. Lightning arrestor. 3,849,704, Cl. 317-13.00r.

Streck, Roland; and Weber, Heinrich, to Chemische Werke Huls Aktiengesellschaft. Polyalkenamers and process for the preparation thereof. 3,849,509, Cl. 260-677.00r.

Strecker, Larry A.; and Wood, James E., to Inmont Corporation. Cable sealant composition and method of sealing cable. 3,849,354, Cl. 260-28.50b.

Stromberg-Carlson Corporation: *See—*
Russell, Stanley L., 3,849,605.

Strycula, Eugene C.: *See—*
Stacey, Eric J.; and Strycula, Eugene C., 3,849,677.

Studiengesellschaft Kohle m.b.H.: *See—*
Wilke, Gunther; and Heimbach, Paul, 3,849,506.

Stull, Morton B. Captive dispensing cap construction. 3,848,779, Cl. 222-521.000.

Stull, Morton B. Safety cap. 3,848,780, Cl. 222-546.000.

Stutz, Hans: *See—*
Stutz, Hans; and Huber, Josef (said Huber assor. to said), 3,848,820.

Stutz, Hans; and Huber, Josef, said Huber assor. to said Stutz, Hans. Method and apparatus for handling a yarn drawn at a high speed from a bobbin by a processing machine. 3,848,820, Cl. 242-18.00r.

Successor Corporation: *See—*
Watkins, John E., 3,848,425.

Sugiyama, Susumu: *See—*
Igarashi, Isemi; Nakamura, Hiroshi; and Sugiyama, Susumu, 3,848,329.

Sugiyama, Yasuo: *See—*
Kasahara, Masao; Namekawa, Toshihiko; Fujiwra, Keniti; Hirasawa, Shigeiti; and Sugiyama, Yasuo, 3,849,761.

Suh, John T.; and Schnettler, Richard A. 2-(Substituted anilino)-4,5-dihydro-3H-1,3-benzodiazepines. 3,849,400, Cl. 260-239.0ad.

Suh, John T., to Colgate-Palmolive Company. α-Substituted-β-arylthioalkyl aminoacids, for increasing heart rate. 3,849,574, Cl. 424-319.000.

Suhr, Poul. Apparatus for wrapping compressible articles. 3,848,398, Cl. 53-124.00c.

Sullivan, Donald P.: *See—*

Walters, David W.; Heeks, Robert E.; and Sullivan, Donald P., 3,849,146.

Sullivan, Edward F. Ring chucking apparatus. 3,848,882, Cl. 279-4.000.

Sullivan, Paul M.: *See—*
Stanczyk, Martin H.; Sullivan, Paul M.; and Spendlove, Max J., 3,848,813.

Sullivan, Richard A.: *See—*
Torpey, Wilbur N.; and Sullivan, Richard A., 3,849,304.

Sulzer Brothers Ltd.: *See—*
Frey, Otto, 3,848,273.

Sumarokov, Mikhail Vasilievich: *See—*
Filippov, Vladimir Ivanovich; and Sumarokov, Mikhail Vasilievich, 3,849,059.

Sumitomo Chemical Co., Ltd.: *See—*
Nakamura, Toshio; Maeda, Tadao; Takenaka, Hiroshi; and Yamahira, Yoshiya, 3,849,558.

Sumitomo Chemical Company, Limited: *See—*
Hongo, Eitaro; Yamada, Hirohiko; Fujii, Yozo; Masuda, Katsumi; Itou, Junichi; and Nakano, Takaaki, 3,849,452.
Nakagome, Takenari; Agui, Hideo; Mitani, Toru; and Nakashita, Mitsuo, 3,849,421.

Sumitomo Chemical Company, Ltd.: *See—*
Oshima, Teruo; Nagase, Tsuneyuki; Masuko, Fujio; Wada, Takeshi; Hirooka, Masaaki; and Taniguchi, Isoji, 3,849,385.

Sumitomo Electric Industries Ltd.: *See—*
Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,849,591.
Noguchi, Takeshi, 3,848,708.

Sumitomo, Yoshiharu: *See—*
Suzuki, Kensuke; Goto, Yasuhide; Iwasaki, Kazunari; and Sumitomo, Yoshiharu, 3,849,188.

Summer, James R., to Round Rock Lime Company, mesne. Vertical kiln control. 3,849,061, Cl. 432-47.000.

Sumrell, Gene: *See—*
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,849,321.
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,849,454.

Sun Oil Company of Pennsylvania: *See—*
Fryback, Melbourne G., 3,848,811.

Sunbeam Electric Limited: *See—*
Brown, John Robert, 3,848,563.

Sundstrand Corporation: *See—*
Anderson, Richard A., 3,849,018.

Superior Outdoor Display Inc.: *See—*
Olsen, Ray, 3,848,349.

Superscope, Inc.: *See—*
Zielke, Darrell W., 3,848,825.

Sutherlin, Kent K.: *See—*
Crowther, Ted J.; Jacobson, Charles F.; and Sutherlin, Kent K., 3,849,766.

Suzuki, Akio: *See—*
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,849,277.
Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685.

Suzuki, Hideaki: *See—*
Nakatsuji, Yasukuni; Kanai, Tamaki; Noda, Hiroshi; Miura, Sadayoshi; and Suzuki, Hideaki, 3,849,382.

Suzuki, Kensuke: *See—*
Nakashima, Yoichi; Sakamoto, Hisashi; Ishizuka, Takeshi; and Suzuki, Kensuke, 3,849,791.

Suzuki, Kensuke; Goto, Yasuhide; Iwasaki, Kazunari; and Sumitomo, Yoshiharu, to Kabushiki Kaisha Kohjin. Electrostatic image-recording medium and method of making same. 3,849,188, Cl. 117-201.000.

Suzuki, Takaji; and Ogawa, Toshio, to Hitachi, Ltd. Signal detection system. 3,848,586, Cl. 128-2.10b.

Suzuki, Yasuo; Arimura, Iwao; and Arai, Tatsuo, to Bridgestone Tire Company Limited. Method for making cordless tires. 3,849,220, Cl. 156-110.0cl.

Svenska Rotor Maskiner Aktiebolag: *See—*
Schibbye, Lauritz Benedictus, 3,848,422.

Swander, Robert E.: *See—*
McGinnis, Paul H.; McLaughlin, William D., Jr.; and Swander, Robert E., 3,849,040.

Sweet, Alvin H.; and Sweet, Don A. Non-slipping hand grip for tennis racket and the like. 3,848,871, Cl. 273-75.000.

Sweet, Don A.: *See—*
Sweet, Alvin H.; and Sweet, Don A., 3,848,871.

Swidler, Ronald; and Benedict, Harris M., to Stanford Research Institute. Boron binding plant growth agents. 3,849,116, Cl. 71-76.000.

Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, to Commonwealth Scientific and Industrial Research. Modification of mineral surfaces. 3,849,149, Cl. 106-288.00b.

Swisher, James A., to International Tool Sales, Inc. Tool bit for vibration attenuation. 3,848,931, Cl. 299-94.000.

Swynford-Lain, Richard, to Ferranti Limited. Video tape recorders for recording plural radar information sources on a single track. 3,849,776, Cl. 343-5.0pc.

Sybron Corporation: *See—*
Grundner, Warren Thorne, 3,849,307.

Symmonds, Gene B.: *See—*
Shreev, George E., 3,848,771.

Syntex (U.S.A.) Inc.: *See—*
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,849,565.

Syrjanen, Ahti, to Yhtyneet Paperitehtaat Oy Jylhavaara. Pulp grinder. 3,848,814, Cl. 241-37.000.

Szappanyos, Bela J. Method of prophylaxis and therapy of species ulmus for Dutch Elm disease caused by Ceratocystis Ulmi. 3,849,566, Cl. 424-343.000.

Tabei, Kiyoshi; and Kittaka, Hirokazu, to Nitto Boseki Co., Ltd. Glass fiber roving band for fiber reinforced plastics. 3,848,406, Cl. 57-149.000.

Tachibana, Yoshishige; and Morikuni, Yoshihiro, to Toyo Boseki Kabushiki Kaisha. Apparatus for successively processing continuously connected textile fabric. 3,848,438, Cl. 68-22.00r.

Tachick, Henry N.; and Arndt, Richard H., to General Electric Company. Elastomeric shield for an electrical conductor connector module and method of making same. 3,849,186, Cl. 117-201.000.

Taft, David D.; and Shepler, Terry H., to Ashland Oil, Inc. Hot melt. 3,849,353, Cl. 260-27.000.

Taft, William K.: *See—*
Snyder, Amandus D.; and Taft, William K., 3,849,081.

Tahara, Tetsuya: *See—*
Nakanishi, Michio; Araki, Kazuhiko; Tahara, Tetsuya; and Shiroki, Masami, 3,849,405.

Taiheiyo Coal Mining Co., Ltd.: *See—*
Nakajima, Shigeo, 3,848,928.

Taira, Takeshi: *See—*
Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, 3,849,298.

Taisei Kensetsu Kabushiki Kaisha: *See—*
Maeda, Hidenori; Matsui, Yujiro; Ikeda, Tsukasa; and Mohri, Eikichi, 3,848,860.

Tait, Robert John: *See—*
Smith, Leslie William; Wates, Michael John; and Tait, Robert John, 3,848,626.

Tajima, Akira, to Canon Kabushiki Kaisha. Short physical length zoom lens. 3,848,969, Cl. 350-184.000.

Takada, Masao: *See—*
Imamura, Kennosuke; Nabekawa, Shukıchi; and Takada, Masao, 3,849,439.

Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, to Takenaka Komuten Company, Ltd. Mud removing system by means of an excavator and an apparatus therefor. 3,848,685, Cl. 175-206.000.

Takagi, Haruyuki: *See—*
Toshioka, Tokuma; Takagi, Haruyuki; and Shirai, Masayuki, 3,848,368.

Takagi, Hidetoshi: *See—*
Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.

Takagi, Mikio; Nakayama, Kazufumi; Terada, Chiaki; and Kamioka, Hajime, to Fujitsu Limited. Process of manufacturing semiconductor devices. 3,849,270, Cl. 204-129.100.

Takahashi, Isoji; and Sato, Masamichi, to Rank Xerox, Ltd., mesne. Method for cleaning background areas from developed recording surfaces. 3,849,171, Cl. 117-37.0le.

Takahashi, Kihei, to Yoshida Kogy Kabushiki Kaisha. Registering device for gaps to be formed in a slide fastener chain. 3,848,500, Cl. 83-465.000.

Takahashi, Koichi; Usui, Keizaburo; Aba, Eiichi; and Ozaki, Kiyotaka, to Nissan Motor Company Limited. Automotive vibration absorbing joint assembly. 3,848,431, Cl. 64-27.0nm.

Takahashi, Ryohei: *See—*
Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.

Takase, Kunio; Miyakoshi, Hisashi; and Ohmura, Mitsuo, to Osaka Gas Co., Ltd. and Ohbayashi-Gumi, Ltd. Underground storage tank for low temperature liquefied gas. 3,848,418, Cl. 61-.500.

Takeda Chemical Industries, Ltd.: *See—*
Morimoto, Hiroshi; Watanabe, Masazumi; Imada, Isuke; and Nishikawa, Masao, 3,849,453.

Takeda, Hideomi, to Asahi Kogahu Kogyo Kabushiki Kaisha. Automatic focusing apparatus. 3,849,643, Cl. 250-201.000.

Takenaka, Hidetsugu: *See—*
Inamoto, Inamoto; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kimura, Yoshitomo, 3,849,473.

Takenaka, Hiroshi: *See—*
Nakamura, Toshio; Maeda, Tadao; Takenaka, Hiroshi; and Yamahira, Yoshiya, 3,849,558.

Takenaka Komuten Company, Ltd.: *See—*
Takagi, Atsushi; Miura, Mitsuo; Suzuki, Akio; Kukino, Yoshinori; Amagai, Kiyoshi; Shimizu, Haruji; Satoh, Mitsutoshi; Kohno, Shoji; and Ebine, Mitsuo, 3,848,685.

Takeshita, Tsuneichi. Tetrapolymer-terpolymer blends. 3,849,517, Cl. 260-876.00r.

Takeshita, Yasuo: *See—*

Kazaoka, Kenichi; Hirose, Kimiharu; Matsumoto, Hisao; and Takeshita, Yasuo, 3,848,888.

Takeuchi, Chikara: *See*—
Iwasaki, Yasuhiro; Tsukamoto, Hidehiko; Maeda, Nobutaka; and Takeuchi, Chikara, 3,848,446.

Takeuchi, Osamu: *See*—
Tsuchiya, Toshio; and Takeuchi, Osamu, 3,848,936.

Takeya, Kenji; and Tanahashi, Kunio, to Japan Exlan Company Limited. Antistatic fiber blend. 3,849,242, Cl. 161-176.000.

Takiguchi, Yoo: *See*—
Arai, Mamoru; Haneishi, Tatsuo; Kayamori, Hisashi; Takiguchi, Yoo; Kitano, Noritoshi; and Kaneko, Susumu, 3,849,398.

Tamarin, Bernard J. Magnetic rotary locking and release mechanism. 3,848,827, Cl. 242-107.700.

Tamura, Tadayoshi: *See*—
Kuwamura, Hideaki; Kashiwa, Ichiro; Hirabayashi, Takashi; and Tamura, Tadayoshi, 3,849,346.

Tanahashi, Kunio: *See*—
Takeya, Kenji; and Tanahashi, Kunio, 3,849,242.

Tanaka, Ichiro. Apparatus for mechanically cutting flanges from preshaped steel construction members. 3,848,499, Cl. 83-461.000.

Tanaka, Kiyoshi: *See*—
Kurita, Yuko; Kawanishi, Yasuhiro; Yoshikawa, Katsuji; and Tanaka, Kiyoshi, 3,849,028.

Tanaka, Mitsugu: *See*—
Iwano, Haruhiko; Tanaka, Mitsugu; Otsuki, Tesuo; and Arai, Atsuaki, 3,849,133.

Taniguchi, Isoji: *See*—
Oshima, Teruo; Nagase, Tsuneyuki; Masuko, Fujio; Wada, Takeshi; Hirooka, Masaaki; and Taniguchi, Isoji, 3,849,385.

Tanimura, Shoichiro: *See*—
Funakubo, Eiichi; Matsuo, Tetsuo; Taira, Takeshi; Kamada, Taichi; Harada, Hiroshi; Tanimura, Shoichiro; and Kubo, Masanori, 3,849,298.

Tanner, Charles L., to Tanner Engineering Company. Fluid seal. 3,848,880, Cl. 277-176.000.

Tanner Engineering Company: *See*—
Tanner, Charles L., 3,848,880.

Tao, Fan-Sheng: *See*—
Maddox, Jim, Jr.; and Tao, Fan-Sheng, 3,849,540.

Tarossi, Frank J., to Esso Research and Engineering Company. Centralized cargo handling system for cryogenic vessels. 3,848,559, Cl. 114-74.000.

Tashiro, Chiaki: *See*—
Nakanishi, Michio; Oe, Takanori; and Tashiro, Chiaki, 3,849,410.

Tavazzani, Carlo: *See*—
Seberini, Febo; Valvassori, Alberto; Tavazzani, Carlo; and Pagliari, Alberto, 3,849,518.

Taylor & Challen Limited: *See*—
Baugh, Raymond Ernest; and Plaister, John Edward, 3,848,444.

Taylor, Carol O.: *See*—
Dix, Robert M.; and Taylor, Carol O., 3,849,652.

Taylor, Charles R.; Bernhard, Albert J.; Bradford, Jerry I.; and Williams, Donald J., to Armour and Company. Handling live animals to prepare them for slaughter. 3,848,294, Cl. 17-45.000.

Taylor, John H.: *See*—
Kraklau, David M.; and Taylor, John H., 3,848,337.

Taylor, Robert G.: *See*—
Creager, John E.; and Taylor, Robert G., 3,849,029.

Teach, Eugene G., to Stauffer Chemical Company. Meta-thiocarbamilate ethers and sulfides. 3,849,464, Cl. 260-455.00a.

Tecna Corporation: *See*—
Kitrilakis, Sotiris, 3,848,590.

Ted Bildplatten Aktiengesellschaft AEG-Telefunken TELDEC: *See*—
Joschko, Gunter; and Winter, Hans-Jurgen, 3,848,876.

Teijin Limited: *See*—
Nakatsuji, Yasukuni; Kanai, Tamaki; Noda, Hiroshi; Miura, Sadayoshi; and Suzuki, Hideaki, 3,849,382.

Teitelbaum, Dvora; Gan, Ramat; Meshorer, Asher; Hirshfeld, Tsvi; Arnon, Ruth; and Sela, Michael, to Yeda Research and Development Co., Ltd. Therapeutic copolymer. 3,849,550, Cl. 424-78.000.

Tektronix, Inc.: *See*—
Piazza, Richard Elliot; and Janko, Bozidar, 3,849,695.

Telesco Brophey Limited: *See*—
Weber, Heinz, 3,848,740.

Temple, Chester S., to PPG Industries, Inc. Method of treating glass fibers to improve adhesion to polyolefins. 3,849,148, Cl. 106-287.0sb.

Templeton, George E.: *See*—
Daniel, James T.; Templeton, George E.; and Smith, Roy J., Jr., 3,849,104.

Tenen, Stan: *See*—
Berman, Herbert; and Tenen, Stan, 3,849,709.

Ter-Gevorkian, Vrej; deceased (by Sarhadiam, Aram; administrator). Chess wheel. 3,848,345, Cl. 35-8.00r.

Terada, Chiaki: *See*—
Takagi, Mikio; Nakayama, Kazufumi; Terada, Chiaki; and Kamioka, Hajime, 3,849,270.

Terada, Fumio; Matsuda, Yoshio; and Yamaguchi, Yoshiharu, to Yoshida Kogyo Kabushiki Kaisha. Method for producing a sliding clasp fastener. 3,848,556, Cl. 112-265.000.

Teradyne, Inc.: *See*—
Kern, Walter, 3,848,958.

Terashima, Isamu: *See*—
Otubo, Osamu; Terashima, Isamu; and Akutsu, Norio, 3,848,990.

Terrington Company, The: *See*—
Stella, Leo; and Sarbello, Alfred J., 3,848,938.

Terry, Nick H.: *See*—
Leibrick, Peter; and Terry, Nick H., 3,848,728.

Tesner, Pavel Alexandrovich; Knorre, Vadim Georgievich; Podkopaev, Vladimir Fedorovich; Pakhtusova, Tamara Timofeevna; Baenkevich, Vsevolod Viktorovich; and Astakhov, Arkady Petrovich. Tubular reactor for production of carbon black from acetylene by detonaion explosion. 3,849,073, Cl. 23-259.500.

Tesoro, Giuliana C.; and Ring, Richard, to Stevens, J. P., & Co., Inc. Fluoroalkyl aziridinopiopionates. 3,849,401, Cl. 260-239.00e.

Tessell, Leslie E.: *See*—
Smit, Henry, 3,848,721.

Tetjuev, Vladimir Alexandrovich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Popov, Valery Georgievich; Tjurikov, Pavel Ivanovich; and Kosmatenko, Ivan Egorovich. Apparatus for electroslag melting of hollow ingots. 3,848,657, Cl. 164-252.000

Texaco Inc.: *See*—
Kreuz, Kenneth L.; and McMahon, Matthew A., 3,849,085.
Maddox, Jim, Jr.; and Tao, Fan-Sheng, 3,849,540.
McKinlay, Philip F.; Smith, Harry D., Jr.; and Schultz, Ward E., 3,849,646.
Nebzydoski, John W., 3,849,319.
Schievelbein, Vernon H.; and Sample, Thomas E., Jr., 3,849,328.
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Brau, Maurice J.; and Reynolds, Richard A., 3,849,205.
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Textron, Inc.: *See*—
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Tezuka Kosan Kabushiki Kaisha: *See*—
Tezuka, Kunitoshi, 3,848,392.

Tezuka, Kunitoshi, to Tezuka Kosan Kabushiki Kaisha. Method for disposal of industrial wastes. 3,848,392, Cl. 53-21.00r.

Therachemie Chemisch Therapeutische GmbH: *See*—
Wiskott, Erik, 3,849,064.

Therkildsen, Henry T., to Caterpillar Tractor Company. Winch drum disconnect clutch. 3,848,852, Cl. 254-187.00r.

Thettu, Raghulinga R.; and Kocher, Haribhajan S., to Xerox Corporation. Moisture control device. 3,848,988, Cl. 355-3.00r.

Thettu, Raghulinga R.; and Williams, Edward G., to Xerox Corporation. Reinforced fuser roll construction. 3,849,062, Cl. 432-60.000.

Thiel, Max: *See*—
Hubner, Manfred; Heerdt, Ruth; Schmidt, Felix Helmut; Thiel, Max; and Weyer, Rudi, 3,849,417.

Thomas, Glenn R.: *See*—
Mrenna, Stephen A.; and Thomas, Glenn R., 3,849,747.

Thomas, Lynn Carol. Hair curler construction and case. 3,848,610, Cl. 132-39.000.

Thomas, Ralph H., to Bristol-Meyer Company. Container-snap-on closure assembly. 3,848,762, Cl. 215-224.000.

Thomas, Robert Lee. Umbrella mounting bracket. 3,848,838, Cl. 248-42.000.

Thompson, Alligene: *See*—
Conaway, Mildred; Thompson, Alligene; Bowen, Dorsie Mae; Brown, Danny; and McGarrah, Larry, 3,848,266.

Thompson, Harry W., to Interlake, Inc. Stacking frame. 3,848,747, Cl. 211-177.000.

Thompson, John T.; and Cowan, Arnold A., to Bohrick Corporation, The. Shock absorber, piston and valve structure. 3,848,710, Cl. 188-280.000.

Thompson, Julian L.: *See*—
Hughes, Richard Swart; and Thompson, Julian L., 3,849,742.

Thompson, Neil J., to National Ceiling Corporation. Modular ceiling construction. 3,848,385, Cl. 52-475.000.

Thompson-CSF: *See*—
Brenot, Claude; and Mollard, Gaston, 3,848,711.

Thoms, William Charles: *See*—
Bakermans, Fransiscus Cornelius; and Thoms, William Charles, 3,848,316.

Thomson-CSF: *See*—
Bareyt, Claude, 3,849,676.

Thornburg, Donald R., to Westinghouse Electric Corporation. Primary recrystallized textured iron alloy member having an open gamma loop. 3,849,212, Cl. 148-31.550.

Throner, Guy C. Traction splint. 3,848,589, Cl. 128-84.00c.

Throner, Guy C. Antiseptic catheter. 3,848,603, Cl. 128-349.00r.

Tighe, Charles I., Jr., to AMP Incorporated. Zero insertion force edge card connector. 3,848,952, Cl. 339-91.00r.

Tillman, Gary P. Conduit support clamp. 3,848,839, Cl. 248-54.00r.

Tippmann, Heinrich, to ITT Industries, Inc. Cone type friction gearing. 3,848,475, Cl. 74-192.000.

Tjurikov, Pavel Ivanovich: *See*—
Tetjuev, Vladimir Alexandrovich; Medovar, Boris Izrailevich; Chekotilo, Leonty Vasilievich; Popov, Valery Georgievich; Tjurikov, Pavel Ivanovich; and Kosmatenko, Ivan Egorovich, 3,848,657.

Tobin-Arp Manufacturing Company: *See*—

Peterson, Bertil G., 3,849,091.
Toby Enterprises: *See*—
Toby, Max E., 3,848,725.
Toby, Max E., to Toby Enterprises. Driven-article dropping machine and method. 3,848,725, Cl. 198-35.000.
Toki, Tadaaki: *See*—
Shigehara, Itaru; Nishiyama, Ryuzo; Takahashi, Ryohei; Fujikawa, Kanichi; Toki, Tadaaki; Takagi, Hidetoshi; Nasu, Rikuo; Yokomichi, Isao; Kimura, Fumio; and Someya, Shinzo, 3,849,503.
Tokico Ltd.: *See*—
Hayashida, Yoshihiro, 3,849,770.
Soya, Masahiro, 3,848,458.
Tokiwa, Fumikatsu; and Imamura, Tetsuya, to Kao Soap Co., Ltd. Composition for pre-washing treatment of textiles. 3,849,347, Cl. 252-545.000.
Toko Inc.: *See*—
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Tokonami, Masao: *See*—
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Tokyo Kikai Seisakusho, Ltd.: *See*—
Yonekura, Saku; Miyamoto, Hideaki; and Namba, Akio, 3,848,998.
Tokyo Sanyo Electric Co., Ltd.: *See*—
Kurita, Yuko; Kawanishi, Yasuhiro; Yoshikawa, Katsuji; and Tanaka, Kiyoshi, 3,849,028.
Tokyo Shibaura Electric Co., Ltd.: *See*—
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Tomita, Chikayoshi: *See*—
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; and Suzuki, Akio, 3,849,277.
Tompkins, Leo L. Counter-wave pulse jet engine. 3,848,408, Cl. 60-248.000.
Tong, Yulan C., to Dow Chemical Company, The. Bis-(alkylthio- and alkylsulfonyl-) pentachloroquinolines. 3,849,420, Cl. 260-283.00s.
Tonsfeldt, Wayne S. Tool holder. 3,848,679, Cl. 172-762.000.
Topolsky, Vladimir Filippovich: *See*—
Gurevich, Samuil Mordkovich; Zamkov, Vadim Nikolaevich; Prilutsky, Valery Pavlovich; Topolsky, Vladimir Filippovich; Podkopai, Nikolai Vasilievich; Manoilo, Sergei Afanasievich; and Kykhno, Semen Leonidovich, 3,849,211.
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Torpey, Wilbur N., to Autotrol Corporation. Method and apparatus for upgrading wastewater treatment plants. 3,849,303, Cl. 210-4.000.
Torpey, Wilbur N.; and Sullivan, Richard A., to Autotrol Corporation. Method for the primary and secondary treatment of wastewater in a unitary apparatus. 3,849,304, Cl. 210-14.000.
Torstensson, Nils Torsten Lennart: *See*—
Jonsson, Arne Gosta; and Torstensson, Nils Torsten Lennart, 3,849,552.
Toshioka, Tokuma; Takagi, Haruyuki; and Shirai, Masayuki. Apparatus for pneumatic tire uniformity correction. 3,848,368, Cl. 51-165.00r.
Totten, George A. Means for and method of dispensing medicinal tablets and capsules. 3,848,395, Cl. 53-35.000.
Tourneur, Roger, to Societe Anonyme D.B.A. Disc brake caliper and friction pad mounting structure. 3,848,709, Cl. 188-73.300.
Townsend, Timothy Joseph: *See*—
Grantt, David Lawrence; Stone, Dan Frederick; and Townsend, Timothy Joseph, 3,848,766.
Toyo Boseki Kabushiki Kaisha: *See*—
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Toyo Kogyo Co., Ltd.: *See*—
Kurio, Noriyuki, 3,849,038.
Toyoda Koki Kabushiki Kaisha: *See*—
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
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Trane Company, The: *See*—
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Treczka, Leo, to Spinner GmbH Elecktrotechnische Fabrik. Directional quarterwave coaxial coupler having means to axially move the coupling conductors. 3,849,743, Cl. 333-10.000.
Trelc, William F., to McGrew-Edison Company. Potisserie spit mounting means. 3,848,522, Cl. 99-421.00h.
Tri-State Oil Tool Industries, Inc.: *See*—
West, Thomas Douglas, 3,848,684.
Triangle Package Machinery Company: *See*—
Kloppenstein, King L., 3,848,688.
Tridair Industries: *See*—
Petroshanoff, George J., 3,848,953.
Trine, Joseph, to Elphiac. Induction heating device. 3,849,625, Cl. 219-10.790.
Tringali, Dominick; and Dillard, John W., to Universal Business Machines Incorporated. Time recorder. 3,849,783, Cl. 346-134.000.
Triumph International Aktiengesellschaft: *See*—
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TRW Inc.: *See*—
Herbenar, Edward J., 3,849,010.
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Tsubakimoto Chain Co., Ltd.: *See*—
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Tsuchiya, Toshio; and Takeuchi, Osamu, to Honda Giken Kogyo Kabushiki Kaisha. Track device for vehicles. 3,848,936, Cl. 305-35.0eb.
Tsujimoto, Noboru; Maruyama, Katsuji; and Misawa, Haruo, to Chinon Industries Incorporated. Method and apparatus for synchronized shooting and projection of a movie and recording and playback of sound on a tape. 3,848,976, Cl. 352-17.000.
Tsukamoto, Hidehiko: *See*—
Iwasaki, Yasuhiro; Tsukamoto, Hidehiko; Maeda, Nobutaka; and Takeuchi, Chikara, 3,848,446.
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Turley, Robert R.; Castor, William M.; and Nunnally, Kenneth R., to Dow Chemical Company, The. Method of preparing an improved dehydrogenation catalyst. 3,849,339, Cl. 252-455.00r.
Turnbull, David G.: *See*—
Ritter, Robert A.; and Turnbull, David G., 3,849,089.
Turner, Stephen, to Reckitt & Colman Products Limited. Bicyclic polyols. 3,849,505, Cl. 260-617.00f.
Turner, William Brian: *See*—
Ousby, John Clark; and Turner, William Brian, 3,849,437.
Tye, John M. Agricultural drill. 3,848,553, Cl. 111-87.000.
Uematsu, Yutaka; and Fukuda, Tsuguo, to Tokyo Shibaura Electric Co., Ltd. Intracavity second harmonic generator. 3,849,667, Cl. 307-88.300.
Ueno, Katsuyoshi: *See*—
Koike, Hirotami; and Ueno, Katsuyoshi, 3,849,647.
Uerlichs, Johannes; Muller, Rudolf; and Kuckertz, Wilhelm, to Rappold, Hermann, & Co., GmbH. Damper slide for hot blast slide dampers. 3,848,665, Cl. 165-168.000.
Ufton, Keith Frederick: *See*—
Jaggers, Brian George; Ufton, Keith Frederick; and Wagner, Horst Richard, 3,849,326.
Ulmer, Dalton C.: *See*—
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Ulrich, Klaus-Herbert: *See*—
Hartwig, Jurgen; Scheffler, Ulrich; and Ulrich, Klaus-Herbert, 3,849,269.
Umezu, Hideo. Plastic clamping ridged strap. 3,848,840, Cl. 248-73.000.
Unfried, Happy H.; and Cogger, John F., to United States of America, Navy. Fluidically controlled pneumatic to mechanical converters. 3,848,514, Cl. 91-3.000.
Union Carbide Corporation: *See*—
Albright, Charles W.; and Keller, George E., II, 3,849,075.
Ancker, Fred H., 3,849,174.
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Usui, Keizaburo: *See—*
Takahashi, Koichi; Usui, Keizaburo; Aba, Eiichi; and Ozaki, Kiyotaka, 3,848,431.

Vaillant, Christian; and Menissez, Jean Pierre, to Fives-Cail Babcock. Self-propelled crusher unit. 3,848,817, Cl. 241-101.700.

Vaillant, Christian; and Menissez, Jean-Pierre, to Fives-Cail Babcock. Mobile crusher unit. 3,848,818, Cl. 241-101.700.

Vaillant, Robert Guillaume: *See—*
Jannot, Michel Rene; Vaillant, Robert Guillaume; and Dzalba-Lyndis, Serge Yvan, 3,848,697.

Valdo, Alex R., to Ethyl Corporation. Foamed metal bodies. 3,848,666, Cl. 165-168.000.

Vali, Miklos: *See—*
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Valukonis, Jonas: *See—*
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Van Baggem, Johannes Willhelmus, to Intomart N.V. System for determining the listening and viewing habits of wave signal receiver users. 3,849,729, Cl. 325-31.000.

Van Beukering, Henricus Cornelis Johannes: *See—*
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Van Buren, John: *See—*
Page, Kenneth J.; and Van Buren, John, 3,848,858.

Van Der Lely, Ary; and Bom, Cornelis Johannes Gerardus. Soil cultivating implements and screening elements. 3,848,677, Cl. 172-112.000.

Van der Linde, Aart; and Hornsveld, Eduard Maurice, to Reactor Centrum Nederland. Method of heat treating welded Zr-Cb objects. 3,849,215, Cl. 148-127.000.

van der Perk, Klaas Anthonie Jacob, to ITT Industries, Inc. Testing apparatus for shock absorbers on vehicles. 3,848,456, Cl. 73-11.000.

van der Winden, Johannes Bernardus, to Stork Amsterdam B.V. Apparatus for diverting a row of cylindrical bodies alternately into two paths of travel. 3,848,746, Cl. 198-31.0ac.

Van Esdonk, Johannes: *See—*
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Van Essen, Uilke: *See—*
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Van Schijndel, Marinus Johannes, to Hunter Douglas International N.V. Foil coiling machine. 3,848,824, Cl. 242-56.00a.

Van Tassell, Harry M., to Universal Oil Products Company. Process for producing para-diethylbenzene. 3,849,508, Cl. 260-672.00t.

Van Vlaanderen Machine Company: *See—*
Davidson, William Ward, Jr., 3,848,320.

Vandenberg, Edwin James, to Hercules Incorporated. Finely divided crystalline polymers of 1,4-dihalo-2,3-epoxybutane. 3,849,364, Cl. 260-33.8ep.

Vapor Corporation: *See—*
Alexander, William H., 3,848,849.
Rieter, James F., Jr., 3,848,428.

Varker, Alan E.: *See—*
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VEB Pentacon Dresden Kamera- und Kinowerke: *See—*
Schulze, Heinz, 3,849,785.

Velissaris, George. Billiard-type table with rotatable disk on playing surface having at least one ball aperture therethrough. 3,848,872, Cl. 273-125.00r.

Velsicol Chemical Corporation: *See—*
Fields, Richard W., 3,849,108.
Krenzer, John, 3,849,412.

Velzel, Christiaan Hendrik Frans, to U.S. Philips Corporation. Interferometer apparatus for measuring the roughness of a surface. 3,849,003, Cl. 356-109.000.

Versnel, John: *See—*
Wolford, Lionel T.; and Versnel, John, 3,849,371.

Verwey, William G. A.; and Stanton, Stephen L., to Precision Industries, Inc. Stitching head apparatus. 3,848,790, Cl. 227-90.000.

Vetter, Artur, to Multivac Sepp Haggenmuller KG. Apparatus for longitudinally separating serially produced synthetic-resin packages. 3,848,492, Cl. 83-99.000.

Viesturs, Eric A. Light weight flotation mattress. 3,848,282, Cl. 5-348.0wb.

Villa-Real, Anthony-Euclid. Automatic elasto-valvular hypodermic sampling needle. 3,848,579, Cl. 128-2.00f.

Villani, Gerard J., to Norton Company. Capacitor powder. 3,849,124, Cl. 75-177.000.

Villax, Ivan. Process of dehalogenation and dehalogenation with simultaneous reduction of 11a-halo-6-deoxy-3-demethyl-6-methylenetetracyclines by hydrazine. 3,849,491, Cl. 260-559.0at.

Vints, Viktor Vladimirovich: *See—*
Malievsky, Alexandr Dmitrievich; Vints, Viktor Vladimirovich; Emanuel, Nikolai Markovich; and Parfenov, Viktor Nikolaevich, 3,849,499.

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Vittori, Angelo James. Front wheel drive cycle. 3,848,891, Cl. 280-250.000.

Vogt, Berthold Richard; Bernstein, Jack; and Weisenborn, Frank Lee, to Squibb, E. R., & Sons, Inc. Cyclohexadienylamidoalkylphenylsulfonyl ureas. 3,849,490, Cl. 260-553.0da.

Voitsekhovskaya, Faina Fedorovna: *See—*
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Voitsekhovsky, Bogdan Vyacheslavovich; Voitsekhovskaya, Faina Fedorovna; and Voitsekhovsky, Bogdan Bogdanovich. Immersion hydropercussive device. 3,848,681, Cl. 173-125.000.

Volkert, Otto: *See—*
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Von Duprin, Inc.: *See—*
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Von Strandtmann, Max; Klutchko, Sylvester; Kaminsky, Daniel; and Shavel, John, Jr., to Warner-Lambert Company. Chromone-3-carboxylic acids. 3,849,446, Cl. 260-345.200.

Voorhies, Alexis, Jr. Fluidized platinum reforming followed by fixed-bed platinum reforming. 3,849,289, Cl. 208-65.000.

Voorman, Johannes Otto, to U.S. Philips Corporation. Hybrid circuit. 3,849,609, Cl. 179-170.0nc.

Vostral, Henry J.: *See—*
Kornis, Gabriel; Steinhards, Arnolds; Nidy, Eldon George; and Vostral, Henry J., 3,849,106.

Voswinckel, Gerhard, to Krantz, H. Continuous web winding apparatus. 3,848,826, Cl. 242-66.000.

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Waaben, Sigurd Gunther, to Bell Telephone Laboratories, Incorporated. Low power flip-flop circuits. 3,849,675, Cl. 307-292.000.

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Wada, Koji: *See—*
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Waddan, Dhafir Yusuf, to Imperial Chemical Industries Limited. Process for preparing 3-pentenenitrile. 3,849,472, Cl. 260-465.300.

Wadsworth, Donald H.; and Perkins, William C., to Eastman Kodak Company. Light-sensitive compositions comprising polymers containing diarylcyclopropene moiety and process of using. 3,849,144, Cl. 96-35.100.

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Wallington, Michael J., to Associated Electrical Industries Limited. Plural sample ion source. 3,849,656, Cl. 250-424.000.

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Walz, Alfred; and Ostreicher, Robert; deceased (by Rombach, Ingrad; geb. Ostreicher). Circuit for operation of gas discharge lamps. 3,849,717, Cl. 321-15.000.

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Wanless, Varney V., 20% to Lee, Raymond, Organization, Inc., The. Safety device for hacksaw. 3,848,649, Cl. 145-35.00r.

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Wates, Michael John: *See—*
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Wathen, Robert Lucian, to Sperry Rand Corporation. Motor shiftable shock absorbing bumper. 3,848,914, Cl. 293-9.000.

Watkins, John E., to Successor Corporation. Low pressure refrigeration system. 3,848,425, Cl. 62-174.000.

Way, Merton B.; and Pas, John. Highway safety tire device. 3,848,853, Cl. 256-1.000.

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Weber, Kenneth E.; Crozier, Donald G.; and Hawley, Wilbur W., said Weber and said Crozier assors. to Lockheed Aircraft Corporation. Production of stain resistant, clear, sealed anodized films. 3,849,264, Cl. 204-35.00n.

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Weight, Donald E. Bubble solution housing with cover-mounted tube and coil spring. 3,848,355, Cl. 46-7.000.

Weil, Edward D., to Stauffer Chemical Company. Hexahydrotriazine phosphonate derivatives. 3,849,409, Cl. 260-248.0ns.

Weil, Edward D.; and Schlichting, Hans L., to Hooker Chemical Corporation. Thioalkylphenylcarbamates. 3,849,477, Cl. 260-479.00c.
Weiland, Edward E. Tubing connection. 3,848,855, Cl. 256-73.000.
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Weisenburger, August. Multispindle hand screwing device or brace. 3,848,488, Cl. 81-52.40r.
Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, to American Cyanamid Company. Substituted heterocyclic derivatives of azepine. 3,849,441, Cl. 260-326.900.
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Wells, John C., to United Aircraft Corporation. Short circuit protected master-slave power supply. 3,849,665, Cl. 307-24.000.
Wendler, Kenneth T.; and Daniels, David A., to Grace, W. R. & Company. Alkylated tertiary amines as high-temperature antioxidants for ester based lubricants. 3,849,322, Cl. 252-49.900.
West, Thomas Douglas, to Tri-State Oil Tool Industries, Inc. Apparatus for rotary drilling. 3,848,684, Cl. 175-195.000.
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Wilfert, Karl; Gmeiner, Gunter; Grabner, Christian; and Nockemann, Ernst, to Bomoro Bocklenberg & Motte GmbH & Co., KG., Firma and Daimler-Benz Aktiengesellschaft. Door lock, especially for motor vehicle doors. 3,848,910, Cl. 292-216.000.
Wilke, Gunther; and Heimbach, Paul, to Studiengesellschaft Kohle m.b.H. 1,2-Dimethyl cyclooctadiene-1,5. 3,849,506, Cl. 260-666.00a.
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Williams, Raymond E. Sliding vane rotary combustion engine. 3,848,575, Cl. 123-8.110.
Willock, Charles B. Single needle alternating flow blood pump system. 3,848,592, Cl. 128-214.00r.
Wilson, Floyd Leroy. Hole punching fastener for sheet metal. 3,848,505, Cl. 85-19.000.
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Wilson, Robert J.; and Naden, Robert W. Structural surface metal shingle covering. 3,848,383, Cl. 52-533.000.
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Wisinski, Adam Prus, to ICI Australia Limited. Pipeline for delivering cross-linked slurried explosive. 3,848,507, Cl. 86-1.00r.
Wiskott, Erik, to Therachemie Chemisch Therapeutische GmbH. Method and compositions for the dyeing of human hair. 3,849,064, Cl. 8-10.200.
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Witzel, Bruce E.; and Shen, Tsung-Ying, to Merck & Co., Inc. Biphenyleneacetic acid anti-inflammatory agents. 3,849,572, Cl. 424-304.000.
Wolf, Erhard; Kohl, Hans; and Hartfelder, Gunter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Tranquilizer composition and method of treatment. 3,849,559, Cl. 424-244.000.
Wolf, George Robert, to Stauffer Chemical Company. Pigmented masonry water repellent composition containing alkyltrialkoxy silane-alkyl orthosilicate reaction product silicone resin. 3,849,357, Cl. 260-29.6nr.
Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, to Bayer Aktiengesellschaft. Aromatic polyamide compositions containing aromatic disulfimide compound having an affinity for basic dyes. 3,849,376, Cl. 260-47.0cz.
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Wylie, Glenn John; and Koltz, Irving Morton. Envelope having means for readily forming a hand puppet therefrom. 3,848,356, Cl. 46-11.000.

Wythe, Frederick Joseph; and Mylchreest, George Dudley, to Emhart Corporation. Cooling system for glass forming mold. 3,849,101, Cl. 65-355.000.

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Zirngibl, Hans; Fuhr, Werner; Jaschinski, Klemens; Beumer, Peter; and Weidmann, Walter, to Bayer Aktiengesellschaft. Making metal oxides with oxygen-containing gas pre-heated over Pd-Au-Ag-alloy electrode. 3,849,543, Cl. 423-592.000.

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Okayama, Shigeru, and K., and H. Takahashi. Automatic film developing apparatus. Re. 28,247, 11–19–74, Cl. 354—335.

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Arnold, Ethel A., to Ambassador Snack Products, Inc. Food container. 233,642, 11–19–74, Cl. D7—76.

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Battaglia, Thomas A. Stand for real estate sign. 233,706, 11–19–74, Cl. D96—12.

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354 3,848,340

CLASS 34
25 3,848,341
48 3,848,342
164 3,848,343
168 3,848,344

CLASS 35
8R 3,848,345
20 3,848,346

CLASS 36
2.5AL 3,848,347

CLASS 40
64R 3,848,348
132R 3,848,349

CLASS 42
1N 3,848,350
25 3,848,351

CLASS 43
1 3,848,352
42.31 3,848,353
42.49 3,848,354

CLASS 44
7E 3,849,081
56 3,849,082
70 3,849,084
72 3,849,083
78 3,849,085

CLASS 46
7 3,848,355
11 3,848,356
142 3,848,357

CLASS 47
34 3,848,358
56 3,848,359
58 3,848,360

CLASS 48
180C 3,849,086
214 3,849,087

CLASS 49
167 3,848,361

CLASS 51
2K 3,848,362
7 3,848,363
111R 3,848,365
129 3,848,366
165R 3,848,368
3,848,369
237 3,848,370
241S 3,848,371
269 3,849,088
289R 3,848,372
313 3,848,373
373 3,848,374

CLASS 52
36 3,848,364
3,848,375
157 3,848,367
169 3,848,376
3,848,377
184 3,848,378
221 3,848,379
222 3,848,380
236 3,848,381
263 3,848,382
420 3,848,384
475 3,848,385
533 3,848,383
706 3,848,386
735 3,848,387
753D 3,848,388
758D 3,848,389
758H 3,848,390

CLASS 53
7 3,848,391
21R 3,848,392
22A 3,848,393
26 3,848,394
35 3,848,395
43 3,848,396
124C 3,848,398
124D 3,848,397

CLASS 55
33 3,849,089
143 3,849,090
302 3,849,091
3,849,092
316 3,849,093
330 3,849,094
394 3,849,095

CLASS 56
13.9 3,848,399
296 3,848,401
400.2 3,848,402

CLASS 57
34HS 3,848,403
3,848,404
71 3,848,405
149 3,848,406

CLASS 58
68 3,848,400

CLASS 59
78.1 3,848,407

CLASS 60
248 3,848,408
345 3,848,409
347 3,848,410
432 3,848,411
517 3,848,412
525 3,848,413
593 3,848,414
595 3,848,415
644 3,848,416

CLASS 61
.5 3,848,418
1F 3,848,417
5 3,848,419
45D 3,848,420
72.3 3,848,421

CLASS 62
23 3,849,096
45 3,848,423
84 3,848,422
115 3,848,424
174 3,848,425
255 3,848,426
260 3,848,427
285 3,848,428
298 Re.28,246
439 3,848,429
476 3,848,430

CLASS 64
27NM 3,848,431

CLASS 65
33 3,849,097
152 3,849,098
158 3,849,099
348 3,849,100
355 3,849,101

CLASS 66
54 3,848,432
125R 3,848,433
163 3,848,434

CLASS 68
5D 3,848,435
12R 3,848,436
3,848,437
22R 3,848,438
184 3,848,439

CLASS 70
55 3,848,440
232 3,848,441
366 3,848,442

CLASS 71
65 3,849,104
3,849,105
76 3,849,102
3,849,116
77 3,849,103
88 3,849,108
92 3,849,106
3,849,107
100 3,849,109
103 3,849,110

CLASS 72
8 Re.28,248
3,848,443
10 3,848,444
142 3,848,445
168 3,848,446
199 3,848,447
349 3,848,449
384 3,848,450
402 3,848,451
448 3,848,452
457 3,848,454
467 3,848,453

CLASS 73
1E 3,848,455
11 3,848,456
24 3,848,457
40.5R 3,848,458
41.2 3,848,459
67.5R 3,848,460
71.5US 3,848,461
88.5R 3,848,462
141AB 3,848,463
170A 3,848,464
194R 3,848,465
349 3,848,466
379 3,848,467
380 3,848,468
422GC 3,848,469
425.6 3,848,470
557 3,848,471

CLASS 74
52 3,848,472
53 3,848,473
117 3,848,474
192 3,848,475
206 3,848,476
242.4 3,848,448
425 3,848,477
484 3,848,478
522 3,848,479
558.5 3,848,480
567 3,848,481
710 3,848,482

CLASS 75
2 3,849,111
3 3,849,112
3,849,113
3,849,114
5 3,849,115
24 3,849,117
53 3,849,125
67 3,849,118
68R 3,849,119
74 3,849,120
103 3,849,121
126A 3,849,122
138 3,849,123
177 3,849,124

CLASS 76
101A 3,848,483

CLASS 81
6 3,848,484
52.4R 3,848,488
57.11 3,848,485

CLASS 82
36R 3,848,486
3,848,487
61 3,848,489

CLASS 83
49 3,848,490
77 3,848,491
99 3,848,492
109 3,848,494
128 3,848,495
133 3,848,496
168 3,848,493
192 3,848,497
401 3,848,498
461 3,848,499
465 3,848,500
471.3 3,848,501
814 3,848,502

CLASS 84
380 3,848,503
402 3,848,504

CLASS 85
19 3,848,505
83 3,848,506

CLASS 86
1R 3,848,507

CLASS 89
36H 3,848,508
41AA 3,848,509
173 3,848,510
191A 3,848,511

CLASS 90
11A 3,848,512
16 3,848,513

CLASS 91
3 3,848,514
184 3,848,515

CLASS 92
92 3,848,516
101 3,848,517
107 3,848,518

CLASS 93
53SD 3,848,519

CLASS 96
1SD 3,849,127
1R 3,849,126
1.3 3,849,132
1.5 3,849,128
3,849,129
3,849,130
3 3,849,131
29L 3,849,134
29R 3,849,133
35.1 3,849,144
36 3,849,135
36.2 3,849,136
67 3,849,137
74 3,849,138
84R 3,849,139
100 3,849,140
107 3,849,146
124 3,849,147

CLASS 98
115K 3,848,521

CLASS 99
421H 3,848,522
3,848,523
631 3,848,524

CLASS 100
48 3,848,525
88 3,848,526

CLASS 101
93C 3,848,527
115 3,848,528
363 3,848,529

CLASS 102
38 3,848,530
70R 3,848,531
87 3,848,532

CLASS 104
18 3,848,533
26A 3,848,534
88 3,848,535
147R 3,848,536
154 3,848,537
155 3,848,538
3,848,539
3,848,540
3,848,541
172B 3,848,542

CLASS 106
1 3,849,141
3,849,142
22 3,849,143
39.6 3,849,145
287SB 3,849,148
288B 3,849,149
3,849,151
288Q 3,849,150
308Q 3,849,152

CLASS 108
5 3,848,543
6 3,848,544
26 3,848,545
52 3,848,546
157 Re.28,244

CLASS 109
49.5 3,848,547

CLASS 110
7R 3,848,548
8A 3,848,549
18R 3,848,550
3,848,551

CLASS 111
77 3,848,552
87 3,848,553

CLASS 112
124 3,848,554
252 3,848,555
265 3,848,556

CLASS 113
121C 3,848,557

CLASS 114
16R 3,848,558
74A 3,848,559

CLASS 115
1R 3,848,560
39 3,848,561

CLASS 116
63R 3,848,562
118R 3,848,563

CLASS 117
2R 3,849,153
4 3,849,154
7 3,849,155
10 3,849,156
11 3,849,157
3,849,158
3,849,159
17 3,849,160
17.5 3,849,161
33.5T 3,849,162
3,849,163
36.3 3,849,170
36.8 3,849,164
37LE 3,849,165
3,849,171
47A 3,849,166
3,849,172
51 3,849,167
62.1 3,849,173
65.2 3,849,174
70C 3,849,175
71M 3,849,176
71R 3,849,177
72 3,849,178
97 3,849,179
100B 3,849,180
100M 3,849,182
106R 3,849,168
3,849,181
143A 3,849,169
155UA 3,849,183
3,849,184

161UB 3,849,185
201 3,849,186
3,849,187
3,849,188
205 3,849,189
219 3,849,190
226 3,849,191
232 3,849,192
235 3,849,193

CLASS 118

13 3,848,564
234 3,848,565
637 3,848,566

CLASS 119

5 3,848,567
28 3,848,568
37 3,848,569
51R 3,848,570
126 3,848,571

CLASS 122

32 3,848,572
149 3,848,573

CLASS 123

8.09 3,848,574
8.11 3,848,575
139BD 3,848,576

CLASS 126

25B 3,848,577

CLASS 127

29 3,849,194

CLASS 128

1R 3,848,578
2F 3,848,579
3,848,580
3,848,581
2.06R 3,848,582
2.08 3,848,583
3,848,584
3,848,585
2.1B 3,848,586
9 3,848,587
41 3,848,588
84C 3,848,589
129 3,848,590
145.8 3,848,591
214R 3,848,592
218DA 3,848,593
284 3,848,594
3,848,595
3,848,596
287 3,848,597
3,848,598
3,848,599
303.13 3,848,600
305 3,848,601
344 3,848,602
349R 3,848,603
350R 3,848,604
351 3,848,605
352 3,848,606
400 3,848,607
419R 3,848,608

CLASS 130

27T 3,848,609

CLASS 132

39 3,848,610
45 3,848,611
53 3,848,612
92R 3,848,613

CLASS 133

8R 3,848,614

CLASS 134

1 3,849,195
3,849,196
10 3,849,197

CLASS 135

4R 3,848,615
25R 3,848,740

CLASS 136

25 3,849,198
30 3,849,199
83R 3,849,200
86A 3,849,202
86B 3,849,201
135S 3,849,203

CLASS 137

78 3,848,616
88 3,848,617
91 3,848,618
116 3,848,619
116.3 3,848,620
186 3,848,623
242 3,848,624
268 3,848,621
269 3,848,626
344 3,848,625
392 3,848,627
434 3,848,628
459 3,848,629
468 3,848,622
475 3,848,630
505.1 3,848,631
514 3,848,632
561A 3,848,633
601 3,848,634
610 3,848,635
624.27 3,848,636
625.27 3,848,637

CLASS 138

99 3,848,638
103 3,848,639
145 3,848,640

CLASS 139

12 3,848,641
28 3,848,642
68 3,848,643
207 3,848,644

CLASS 141

117 3,848,645

CLASS 144

3N 3,848,646
3R 3,848,647
34A 3,848,648

CLASS 145

35R 3,848,649

CLASS 148

1.5 3,849,204
1.6 3,849,205
6.2 3,849,206
6.27 3,849,207
3,849,208
12F 3,849,209
12.7 3,849,210
26 3,849,211
31.55 3,849,212
108 3,849,213
111 3,849,214
127 3,849,215
187 3,849,216

CLASS 150

8 3,848,650

CLASS 152

209R 3,848,651
427 3,848,652

CLASS 156

11 3,849,217
18 3,849,218
73.6 3,849,219
110R 3,849,220
145 3,849,221
148 3,849,222
3,849,223
208 3,849,224
213 3,849,225
247 3,849,226
268 3,849,227
297 3,849,228
304 3,849,229
330 3,849,230
403 3,849,231

CLASS 159

13A 3,849,232
48R 3,849,233

CLASS 160

120 3,848,653

CLASS 161

17 3,849,234
44 3,849,235
64 3,849,236
68 3,849,237
159 3,849,238
160 3,849,239
167 3,849,240
169 3,849,241
176 3,849,242
189 3,849,243
199 3,849,244

CLASS 162

4 3,849,245
3,849,246
237 3,849,247

CLASS 164

34 3,848,654
43 3,848,655
89 3,848,656
252 3,848,657
278 3,848,658
405 3,848,659

CLASS 165

1 3,848,660
3,848,662
8 3,848,663
22 3,848,664
155 3,848,661
168 3,848,665
3,848,666

CLASS 166

55.6 3,848,667
72 3,848,668
3,848,669
224R 3,848,670
248 3,848,671
249 3,848,672
275 3,848,673
299 3,848,674

CLASS 169

15 3,848,675
37 3,848,676

CLASS 172

112 3,848,677
225 3,848,678
762 3,848,679

CLASS 173

93.5 3,848,680
125 3,848,681

CLASS 174

21R 3,849,589
31R 3,849,590
107 3,849,591

CLASS 175

5 3,848,682
65 3,848,683
195 3,848,684
206 3,848,685
209 3,848,686
394 3,848,687

CLASS 176

36R 3,849,257
68 3,849,248

CLASS 177

179 3,848,688
233 3,848,689

CLASS 178

5.6 3,849,594
6 3,849,592
3,849,595
6.8 3,849,596
3,849,597
7.82 3,849,598
53.1R 3,849,599

CLASS 179

1D 3,849,601
3,849,602
1G 3,849,600
1H 3,849,603
15AQ 3,849,604
16AA 3,849,605
84T 3,849,606
86 3,849,607
146R 3,849,608
170NC 3,849,609

CLASS 180

6.48 3,848,690
44R 3,848,691
52 3,848,692
70P 3,848,694
79.2R 3,848,693
103 3,848,695

CLASS 181

33HB 3,848,697
156 3,848,696

CLASS 182

83 3,848,698
163 3,848,699
181 3,848,700
185 3,848,701

CLASS 184

6.3 3,848,702

CLASS 187

73 3,848,703
86 3,848,706

CLASS 188

71.8 3,848,704
71.9 3,848,705
3,848,707
73.1 3,848,708
73.3 3,848,709
280 3,848,710

CLASS 191

12R 3,848,711
30 3,848,712
32 3,848,713
33 3,848,714
45R 3,848,715

CLASS 192

3R 3,848,716
93A 3,848,717
133 3,848,721

CLASS 194

1M 3,848,718

CLASS 195

28N 3,849,249
29 3,849,250
3,849,251
62 3,849,252
68 3,849,253
116 3,849,254
129 3,849,255
139 3,849,256

CLASS 197

1R 3,848,719
3,848,720
53 3,848,722
102 3,848,723

CLASS 198

29 3,848,724
31AC 3,848,746
35 3,848,725
108 3,848,726
127 3,848,727
155 3,848,728
171 3,848,729
183 3,848,730
193 3,848,731
204 3,848,732
211 3,848,733
230 3,848,734

CLASS 200

5A 3,849,611
5R 3,849,610
11J 3,849,612
61.27 3,849,613
61.41 3,849,614
61.81 3,849,615
82R 3,849,616
144B 3,849,617
148R 3,849,618
153LB Re.28,249
153SC 3,849,619
157 3,849,620
310 3,849,621

CLASS 202

140 3,849,258
174 3,849,259
181 3,849,260

CLASS 203

38 3,849,262
39 3,849,261

CLASS 204

35N 3,849,263
3,849,264
86 3,849,265
98 3,849,266
99 3,849,267
3,849,268
107 3,849,269
129.1 3,849,270
129.2 3,849,271
129.25 3,849,272
129.6 3,849,273
158R 3,849,274
180R 3,849,275
192 3,849,276
202 3,849,277
237 3,849,278
254 3,849,279
256 3,849,280
268 3,849,281
290F 3,849,282
298 3,849,283
300 3,849,284
305 3,849,285

CLASS 206

45.25 3,848,735
223 3,848,736
315 3,848,737
387 3,848,738
443 3,848,739

CLASS 208

8 3,849,287
14 3,849,288
65 3,849,289
66 3,849,290
78 3,849,291
111 3,849,292
3,849,293
162 3,849,294
166 3,849,295
216 3,849,296
251R 3,849,297
310 3,849,298
3,849,299
3,849,300

CLASS 209

106 3,848,741
111.7 3,848,742
214 3,849,301
218 3,848,743
273 3,849,302
393 3,848,744

CLASS 210

4 3,849,303
14 3,849,304
38 3,849,306
54 3,849,307
98 3,849,308
116 3,849,305
143 3,849,309
188 3,849,311
196 3,849,310
237 3,849,312
400 3,849,313
493 3,849,314

CLASS 211

49D 3,848,745
177 3,848,747
178R 3,848,748

CLASS 212

8R 3,848,749
69 3,848,750
145 3,848,751

CLASS 214

1BB 3,848,754
1BS 3,848,752
1B 3,848,753
16.4A 3,848,755
138C 3,848,756
152 3,848,757
501 3,848,758
730 3,848,759

CLASS 215

12 3,848,760
220 3,848,761
224 3,848,762
225 3,848,763

CLASS 219

10.55 3,849,622
3,849,623
10.79 3,849,625
69V 3,849,624
124 3,849,626
131F 3,849,627
216 3,849,628
342 3,849,629
535 3,849,630

CLASS 220

3.6 3,848,764
9A 3,848,765
9F 3,848,766
59 3,848,767
85P 3,848,768
259 3,848,769

CLASS 221

102 3,848,770
105 3,848,771

CLASS 222

1 3,848,773
36 3,848,774
70 3,848,775
105 3,848,776
145 3,848,772
386 3,848,777
402.11 3,848,778
521 3,848,779
546 3,848,780
559 3,848,781

CLASS 223

34 3,848,782

CLASS 224

39 3,848,783
42.1F 3,848,784
3,848,785
42.45R 3,848,786
45T 3,848,787

CLASS 226

19 3,848,788

CLASS 227

76 3,848,789
90 3,848,790
100 3,848,791

CLASS 228

1 3,848,792
2 3,848,793
3 3,848,794

CLASS 229

23R 3,848,795

CLASS 232

43.1 3,848,797

CLASS 233

25 3,848,796

CLASS 235

61.11B 3,849,631
61.11E 3,849,632
61.12N 3,849,633
92CC 3,849,635
92DP 3,849,634
101 3,848,798
150.27 3,849,636
151 3,849,637
152 3,849,638

CLASS 236

49 3,848,799

CLASS 237

8A 3,848,800

CLASS 239

1 3,849,639
2R 3,848,801
10 3,848,802
59 3,848,803
160 3,848,804
189 3,848,805
265.11 3,848,806
290 3,848,807
327 3,848,808
412 3,848,809
417.3 3,848,810
552 3,848,811

CLASS 240

41.3 3,849,642
100 3,849,640
151 3,849,641

CLASS 241

2 3,848,812
19 3,848,813
37 3,848,814
74 3,848,815
3,848,816
101.7 3,848,817
3,848,818

CLASS 242

4B 3,848,819
18R 3,848,820
55 3,848,821
55.2 3,848,822
56A 3,848,823
3,848,824
56R 3,848,825
66 3,848,826
107.3 3,848,828
107.7 3,848,827
131 3,848,829

CLASS 244

3.16 3,848,830
45R 3,848,831
54 3,848,832
77D 3,848,833
145 3,848,834
155R 3,848,835

CLASS 246

63R 3,848,836

CLASS 248

14 3,848,837
42 3,848,838
54R 3,848,839
73 3,848,840
99 3,848,841
204 3,848,842
224 3,848,843
245 3,848,844
393 3,848,845

CLASS 249

66 3,848,846
115 3,848,847

CLASS 250

201 3,849,643
207 3,849,644
209 3,849,645
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570 3,849,660
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511 3,849,333
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531 3,849,346

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546 3,849,341
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101 3,849,701
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3,849,735

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91R 3,848,951
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92M 3,848,953
97R 3,848,954
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98 3,848,956
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115 3,849,552
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261	3,849,562	304	3,849,572		CLASS 425	247	3,849,048	116	3,849,580	264	3,849,058
263	3,849,563	311	3,849,573	72	3,849,040	326B	3,849,049	145	3,849,581	331	3,849,059
	3,849,564	319	3,849,574	110	3,849,041	363	3,849,050	152	3,849,582	344	3,849,060
270	3,849,567	323	3,849,575	126R	3,849,042	376	3,849,051	162	3,849,583		
	3,849,568			131.1	3,849,045	387	3,849,052		CLASS 431		CLASS 432
271	3,849,569	330	3,849,576	131.5	3,849,043	438	3,849,053				
274	3,849,570		3,849,577		3,849,044	459	3,849,054	7	3,849,055	47	3,849,061
282	3,849,571		3,849,578	208	3,849,046		CLASS 426	24	3,849,056	60	3,849,062
283	3,849,565	343	3,849,566	238	3,849,047	49	3,849,579	158	3,849,057	185	3,849,063

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P. —	10	3,654	P. —	20	3,653						

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D2—	10	233,633			233,646			233,659	D28—	1C	233,671	D47—	5	233,683		R	233,693
	17	233,634			233,647	D12—	40	233,660	D29—	11R	233,672			233,684	D55—	1E	233,697
	232	233,635	D8—	22	233,648		115	233,661	D30—	2	233,673		6E	233,685		G	233,698
	272	233,636		88	233,649		162	233,662		12	233,674	D48—	16A	233,687		R	233,696
	320	233,637		181	233,650	D13—	1J	233,663	D34—	4A	233,675		20H	233,688	D59—	2A	233,699
D6—	31	233,638		266	233,651		M	233,664		5GH	233,676		24R	233,689	D61—	1Q	233,700
	91	233,639		273	233,652	D22—	19	233,665		15AE	233,679		27A	233,690	D64—	11R	233,701
D7—	20	233,640	D9—	63	233,653		31	233,666		GG	233,678		R	233,686	D83—	1A	233,702
	76	233,642		202	233,654						233,680		31	233,691		T	233,703
	77	233,641	D10—	25	233,655	D26—	1A	233,667		KK	233,677						
	93	233,643			233,656		13C	233,668				D49—	1A	233,692	D85—	2H	233,704
	147	233,644		89	233,657		D	233,670	D45—	19R	233,681	D52—	4R	233,694	D92—	4	233,705
	166	233,645		90	233,658		14J	233,669			233,682		6A	233,695	D96—	12A	233,706

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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	3,848,441		3,848,610		3,849,323		3,848,614		3,848,737		3,848,718
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	3,849,668		3,848,631		3,849,329		3,848,743		3,848,779		3,848,735
3	3,848,881		3,848,672		3,849,397		3,848,778		3,848,791		3,848,747
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5	3,848,266		3,848,728		3,849,466		3,848,875		3,849,571		3,848,797
	3,849,104		3,848,750		3,849,531		3,848,928		3,849,581		3,848,831
6	3,848,274		3,848,775		3,849,553		3,848,931		3,849,598		3,848,843
	3,848,276		3,848,781		3,849,554		3,848,938	13	3,848,372		3,848,852
	3,848,286		3,848,796		3,849,565		3,849,056		3,848,550		3,848,865
	3,848,287		3,848,803		3,849,578		3,849,070		3,848,662		3,848,869
	3,848,290		3,848,806		3,849,596		3,849,101		3,849,057		3,848,905
	3,848,299		3,848,807		3,849,611		3,849,130		3,849,121		3,848,906
	3,848,339		3,848,808		3,849,645		3,849,172		3,849,151		3,848,912
	3,848,349		3,848,825		3,849,648		3,849,197		3,849,608		3,848,920
	3,848,352		3,848,842		3,849,650		3,849,218	15	3,848,601		3,848,925
	3,848,360		3,848,863		3,849,653		3,849,250	16	3,848,758		3,848,929
	3,848,364		3,848,871		3,849,664		3,849,257	17	3,848,288		3,848,937
	3,848,371		3,848,880		3,849,698		3,849,271		3,848,293		3,848,945
	3,848,383		3,848,883		3,849,710		3,849,500		3,848,294		3,848,951
	3,848,389		3,848,893		3,849,723		3,849,632		3,848,325		3,848,954
	3,848,395		3,848,895		3,849,742		3,849,637		3,848,335		3,849,018
	3,848,405		3,848,897		3,849,766		3,849,640		3,848,343		3,849,032
	3,848,415		3,848,899		3,849,771		3,849,655		3,848,350		3,849,078
	3,848,440		3,848,907		3,849,780		3,849,662		3,848,357		3,849,108
	3,848,451		3,848,941	8	3,848,347		3,849,663		3,848,375		3,849,122
	3,848,454		3,848,949		3,848,465		3,849,665		3,848,376		3,849,125
	3,848,473		3,848,950		3,848,794		3,849,721		3,848,384		3,849,194
	3,848,483		3,848,953		3,849,004		3,849,728		3,848,385		3,849,206
	3,848,485		3,848,975		3,849,120		3,849,752		3,848,425		3,849,274
	3,848,493		3,849,013		3,849,560	10	3,849,102		3,848,428		3,849,284
	3,848,495		3,849,019		3,849,606		3,849,177		3,848,497		3,849,287
	3,848,498		3,849,026		3,849,607		3,849,181		3,848,513		3,849,292
	3,848,502		3,849,027		3,849,661		3,849,230		3,848,528		3,849,294
	3,848,514		3,849,030		3,849,741		3,849,364		3,848,534		3,849,295
	3,848,523		3,849,053	9	Re.28,248		3,849,372		3,848,552		3,849,309
	3,848,530		3,849,082		3,848,272		3,849,373		3,848,557		3,849,312
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	3,848,535		3,849,116		3,848,327		3,849,465		3,848,582		3,849,340
	3,848,547		3,849,196		3,848,417		3,849,479		3,848,593		3,849,343
	3,848,575		3,849,207		3,848,419		3,849,517		3,848,598		3,849,367
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	3,848,585		3,849,248		3,848,486	12	3,848,429		3,848,622		3,849,412
	3,848,587		3,849,259		3,848,490		3,848,432		3,848,624		3,849,508
	3,848,589		3,849,264		3,848,520		3,848,480		3,848,639		3,849,586
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	3,848,834		3,849,280		3,849,700		3,849,651		3,849,387		3,848,596
	3,848,838		3,849,317				3,849,720	54	3,848,270		3,848,597
	3,848,844		3,849,328	50	3,848,351	52	3,849,778		3,848,915		3,848,717
	3,848,849		3,849,511		3,848,608				3,849,075		3,848,947
	3,848,885		3,849,512		3,848,658	53	3,848,284		3,849,445		3,849,071
	3,849,061		3,849,516				3,848,426		3,849,478		3,849,225
	3,849,094		3,849,540	51	3,848,509		3,848,450				3,849,400
	3,849,118		3,849,545		3,848,548		3,848,551	55	3,848,279		3,849,574
	3,849,205		3,849,626		3,848,770		3,848,832		3,848,304		3,849,670
	3,849,221		3,849,646		3,848,879		3,848,867		3,848,402		3,849,719
	3,849,229		3,849,652		3,849,195		3,849,:05		3,848,430		3,849,751

DESIGN PATENTS

1	233,697		233,706	22	233,702		233,672		233,654		233,645
4	233,634	8	233,687	25	233,655		233,698		233,681		233,646
6	233,633	9	233,676		233,656		233,701		233,682		233,647
	233,652		233,689		233,658	30	233,679		233,700		233,671
	233,662	13	233,670	26	233,651	33	233,641		233,704		233,688
	233,663	17	233,669		233,660	34	233,666		233,705		233,699
	233,664		233,695		233,661		233,683	37	233,649	42	233,668
	233,667	19	233,648		233,673		233,684	39	233,635	44	233,644
	233,675		233,692		233,696	36	233,653		233,639	55	233,650
	233,693	20	233,703	27	233,642						

PLANT PATENTS

6	3,654										

U. S. GOVERNMENT PRINTING OFFICE : O - 1974

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
C. Marshall Dann, *Commissioner*